the magazine of STANDARDS

safety on the slopes . . . page 260

SEPTEMBER, 1960

the magazine of STANDARDS

Standardization is dynamic, not static. It means not to stand still, but to move forward together.

Vol. 31 No. 9 SEPTEMBER 1960

FEATURES

NEWS

DEPARTMENTS

Opinions expressed by authors in THE MAGAZINE OF STANDARDS are not necessarily those of the American Standards Association.

Published by the American Standards Association, Incorporated

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Published monthly by the American Standards Association, Incorporated, 10 East 40th Street, New York 16, N. Y. Subscription rates: Companies in U. S. and possessions, $7.00 per year; in other countries, $8.00. Public libraries, schools, and government agencies, in U. S. and possessions, $6.00 per year; in other countries, $7.00. Single copy 60 cents. Re-entered as second class matter Jan. 25, 1954, at the Post Office, New York, N. Y., under the Act of March 3, 1879. This publication is indexed in the Engineering Index and the Industrial Arts Index. Microfilm copies can be obtained from University Microfilms, Ann Arbor, Mich.

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ASA

OUR COVER: This double chair lift, located at Mt Majestic, Brighton, Utah, is approximately 30 miles east of Salt Lake City in Cottonwood Canyon. The lift is approximately 3500 ft long and has a capacity of 900 passengers per hour. An article describing the new American Standard safety code for aerial tramways, including the double chair lift, starts on page 261.

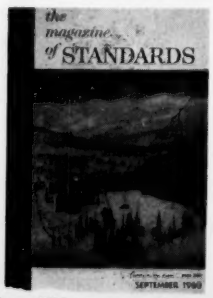


Photo: Riblet Tramway Company

notes

Throughout the world, the American Society for Testing Materials has won the respect and admiration of technical men. Basis for its high reputation is the painstaking work done by its many technical committees and the research that has gone into making ASTM methods of test and standard specifications valuable to industry, government, and research organizations.

The number of ASTM committees and the volume of work done by them is so great that it is difficult to report adequately on ASTM standards achievements. In this issue, however, summaries of the actions taken by the committees that met at the ASTM annual meeting in June are included (p. 276).

The American Society for Testing Materials was one of the founders of the American Engineering Standards Committee (now ASA) in 1918. Many ASTM standards which meet the requirements of ASA are submitted for approval as American Standard.

Recently, ASTM announced a number of changes in staff personnel, which took effect July 1. Because of the long-continuing convalescence of Robert J. Painter, following a number of hip operations, Raymond E. Hess has been named acting executive secretary. Mr Painter, who has been executive secretary since 1952, is serving as consultant. He will continue as treasurer of ASTM and will give concentrated attention to long-range planning.

Mr Hess has been with ASTM since 1920, and for many years served as assistant secretary, technical secretary, and editor-in-chief. Since 1952 he has been associate executive secretary, and during Mr Painter's absence, has been in charge of ASTM headquarters. He is continuing to serve as ASTM technical secretary and editor-in-chief.

There are now some 85 full-time staff members working for ASTM. The headquarters building is at 1916 Race Street, Philadelphia.

This Month's Standards Personality

B. Scott Liston

B. SCOTT LISTON, standards administrator, Diamond Alkali Company, Cleveland, might be called a "prophet of standardization," since he qualifies as "an effective spokesman for a . . . cause," (see Webster). For the past few years he has been in constant demand for talks on standardization before numerous and varied groups in all parts of the United States and Canada. These have included purchasing association sections, groups in private companies, engineering and sales organizations, city sales clubs and private sales management groups, service clubs such as Kiwanis and Rotary, and universities, including student groups as well as seminars on purchasing and materials handling.

Concerning these talks, Mr Liston says: "I sincerely hope that these contacts will help make standards a greater possibility and bring awareness of the greater impetus of our participation on a local and national basis, and internationally as well. The benefits not only to us but to the world as a whole will certainly be returned not only in dollars saved but also in easier and better communication, which is so sorely needed."

A musical student who turned to engineering, Mr Liston went to work as a machinist in 1940 and was subsequently transferred to cost estimating and preliminary design duties for manufacturers of materials handling equipment. He joined the Diamond Alkali Company at the conclusion of World War II, working in its Central Engineering Department. His next three years included education at John Huntington Polytechnic Institute and Western Reserve University in the field of construction engineering and chemistry. He was assigned the responsibility of developing the company's standards program with the title of Standards Coordinator after he was promoted to the Central Engineering Staff group and secretary of the Standards Committee in 1954. He is now Standards Administrator for the company.

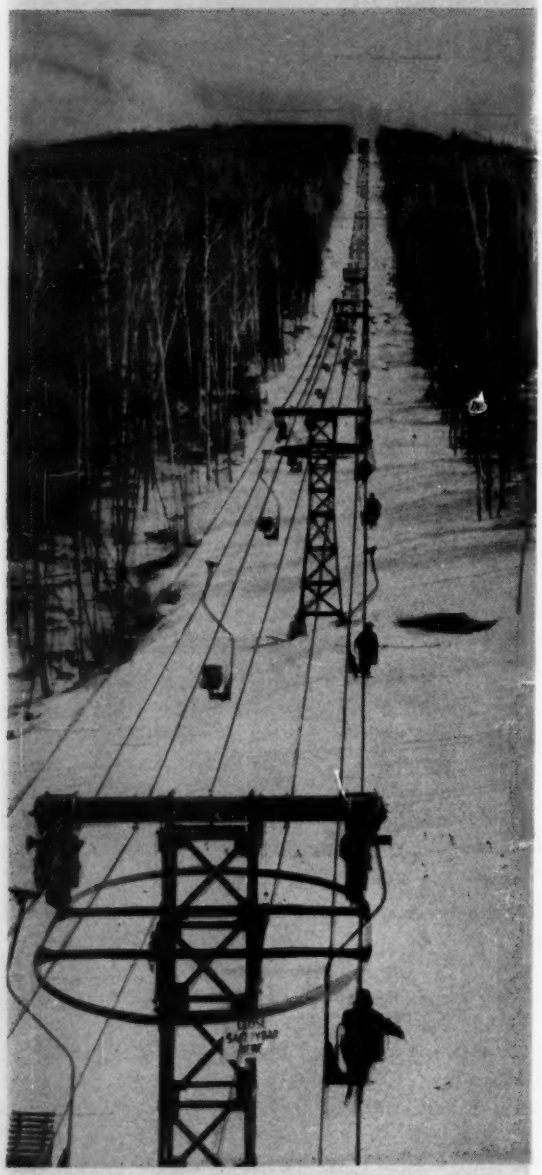
On the national scene, Mr Liston is vice-chairman of the Administrative Committee of ASA's Company Member Conference, and chairman of the newly organized Greater Cleveland Section of the Standards Engineers Society.

Despite the time and attention he devotes to standardization, Mr Liston retains his interest in music, playing French horn in the Lake County Symphony Orchestra of Painesville, Ohio. He is also a member of the orchestra's Board of Directors. Active in his church membership, he spends his summer vacations as camp director of one of its Regional Youth Camps. His hobbies include photography, model railroading, and woodworking.

As the father of a 14-year-old son and 18-year-old daughter, Mr Liston is also active in the young people's organizations in his community.

SAFETY ON THE SLOPES

by HAROLD W. THORNE



John A. Roebling's Sons Division

Single chair lift at Mt Sunapee State Park, New Hampshire, is 3,250 ft long, has a vertical rise of 950 ft, and can carry about 500 passengers per hour. For the protection of riders, American Standard B77.1-1960 provides a guide for safe location of equipment, capacity, speed, and loading intervals, terminals, line structures and line equipment, inspection and maintenance, and operation of different types of "aerial tramways."

New American Standard outlines safety measures to keep aerial tramways safe

MR THORNE is consultant, New Hampshire Passenger Tramway Safety Board, Center Conway, N.H. He is secretary of ASA Sectional Committee B77, which developed the new American Standard Safety Code for Aerial Passenger Tramways, B77.1-1960.

THE SAFETY of skiers, and of sightseers who use the available transportation facilities to climb the mountains, has been considered in development of a new American Standard safety code for aerial passenger tramways. The standard, identified as American Standard B77.1-1960, is sponsored by The American Society of Mechanical Engineers and the Eastern Ski Area Operators Association, and has just been approved and published.[1]

Skiing has become a major form of recreation in this country. According to informed sources, well over 5 million—some say 7 million—men, women, and children are now participants. Every year the development of new skiing areas, and the expansion of existing areas, creates a demand for the various types of recreational transportation.

There are four principal types of aerial passenger tramways, exclusive of cog railways, cable cars running on rails, and material-handling equipment. These are:

1. *Single and double reversible aerial tramways.* Passengers are carried in one or more enclosed cars which reciprocate between terminals.

2. *Chair lifts, gondola lifts, and skimobiles.* Passengers are carried on chairs, on cars, or in gondola cabs attached to and suspended from a moving wire rope or attached to a moving wire rope or chain and supported on a standing wire rope or other structure.

3. *T-bar lifts, J-bar lifts, platter lifts, and similar devices.* Skiers riding on skis are pulled by means of devices propelled by a main overhead traveling wire rope.

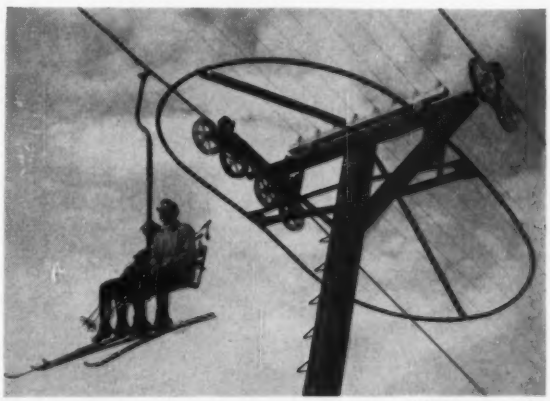
4. *Fiber rope tow.* Skiers riding on skis are pulled by means of a traveling fiber rope, which the skier grasps by his hand.

In addition to use of this equipment for skiing, many of the areas that have tramways of the first or second types stay open during most of the year. Increasing thousands of tourists visit these areas in the months when there is no skiing, to ride the tramways and enjoy the scenery. This, of course, makes it necessary for the operators to follow somewhat different operating procedures than in the skiing season, and calls for different safety precautions.

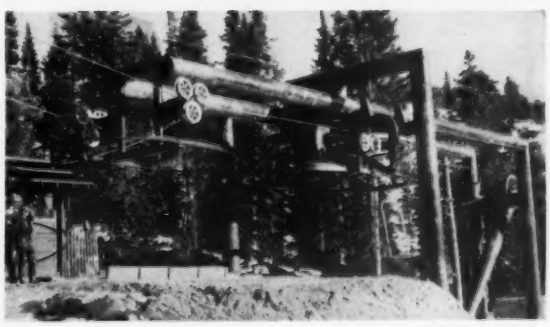
[1] Copies of American Standard Safety Code for Aerial Passenger Tramways, B77.1-1960, are available at $2.50 each.

Recognizing the need for safety standards, the operators and owners of skiing resorts, manufacturers of the equipment, safety organizations, technical associations, and insurance groups have worked together to develop a safety standard under the procedures of the American Standards Association. The new American Standard Safety Code for Aerial Passenger Tramways, B77.1-1960, establishes safety standards for recreational transportation of passengers on the devices mentioned above. As indicated before, it does not cover equipment such as cog railways, cable cars runnings on rails, and material-handling equipment. In addition to general safety provisions, there are four principal divisions of the standard, each one dealing with a specific type of tramway.

In the summer of 1956, a serious accident occurred due to the failure of the hauling wire rope of a chair lift. Soon after the accident, Philip A. Robertson, president of the Eastern Ski Area Operators Association, called a special meeting of the association at the site of the accident. This organization was formed in 1950 by the operators and owners of most of the popular



Riblet Tramway Co.



Hall Ski-Lift Co.

Above: *Tower and line machinery carrying double chair lift is designed for maximum clearance to prevent skis and ski poles from catching in equipment.*

Below: *Terminal of tension equipment receives special attention for safe operation and maintenance.*

skiing resorts located in the eastern portion of the United States. The purpose of the association is to stimulate and promote skiing, and safety in skiing, and to promote high standards of operating procedures and business practice. Members are obligated to conform to prescribed operating standards covering such items as minimum number of tramway attendants, automatic stops, maintenance, signs, first aid, and similar precautions. At its meeting, the association considered the establishment of a comprehensive code, or safety standard, prepared or adopted by a nationally recognized technical organization. As a result, the association authorized an application to be submitted to the American Standards Association asking ASA to initiate a project for this purpose.

Under ASA auspices a general conference, to which the many organizations and corporations having an interest in the subject were invited to send representatives, was held in New York City on October 25, 1956. The conference recommended that the American Standards Association initiate a safety project on aerial passenger tramways under the sectional committee method, and that The American Society of Mechanical Engineers and the Eastern Ski Area Operators Association be invited to act as co-sponsors.

The sponsors chose Philip A. Robertson, Cranmore Skimobiles, Inc, North Conway, N.H., as chairman, with Harold W. Thorne, Center Conway, N.H., as secretary, and Frank G. Sterritte, New York, as assistant secretary.

The committee authorized the chairman to appoint subcommittees, or task forces, to prepare various divisions of the code. Detailed requirements for all sections of Division 1 on cable tramways were prepared by Subcommittee 2 with Blair Birdsall, chief engineer, Bridge Division, John A. Roebling's Sons Corporation, Trenton, N.J., as chairman. Subcommittee 4 prepared the sections on fiber rope tows. L. Perry Williams, president, Snow Ridge Ski Area, Boonville, N.Y., was chairman of Subcommittee 4. The standard was redrafted four times before it was submitted to the entire sectional committee.

As finally approved by the committee and by the American Standards Association, the standard is designed as a guide for regulatory agencies or others, public or private, in the formulation of safety rules and regulations. It represents the latest thinking of a cross section of the industry and of existing regulatory agencies. References to "authority having jurisdiction" in the text refer to the authorized public body (preferably composed of representatives of the public, representatives of the operating industries, and qualified specialists) or a private body or group which may adopt the standard and which is empowered by law or common agreement to enforce its provisions.

Under the general requirements, the following apply to all types of tramways:

1. For purposes of design, the average passenger shall be considered as having a weight of 170 lb.

2. If a designer or manufacturer of equipment wishes to use materials not now covered by the standard, or which may be developed in the future, it is intended that full information should be submitted to the committee.

3. It has been assumed in all cases that tramways will run in a straight line, in plan, between terminals. Proposals involving lines with angles will require special consideration by the authority having jurisdiction.

4. Provisions shall be made to render first aid in the event persons are injured on the tramway. This shall include provisions for transporting an injured person off the mountain.

5. Good housekeeping should be maintained at all times.

6. During lightning storms in the immediate neighborhood all passengers shall be unloaded and the tramway shut down immediately.

Detailed requirements for each classification of tramway are presented under the following main headings:

1. Location
2. Width of clearing
3. Location and height of towers
4 Capacity, speed, and loading interval
5. Terminals and stations
6. Line structures
7. Line equipment
8. Communications
9. Signs
10. Evacuation
11. Inspection and maintenance
12. Operation

Following are a few of the specific requirements.

For single and double reversible aerial tramways, of the twenty sub-sections under "Terminals and Stations," number seven covers brakes and manual stops, and reads:

"2.5.7.1 *Brakes.* The tramway system shall have at least the following brakes:

"(1) An automatic brake to stop and hold the tramway system under maximum load when power is shut off or the tramway is stopped for any reason. This brake shall be applied to a drive shaft such that there is no clutch, V-belt, chain drive, or similar device, between the brake and the drive wheel.

"The brake shall be electrically released and applied by springs or gravity, except in cases wherein another type of brake has been specifically approved by the authortiy having jurisdiction. In all cases the brake shall be normally in the applied position. It shall be held open for operation of the tramway by a device which is

automatically cut out when power is shut off or the tramway is stopped. This device shall, without exception, be placed in operation before the tramway is started.

"(2) An automatic over-speed device which will actuate the above brake or a similar independent brake when the speed of the prime mover exceeds its rated value by more than 10 percent.

"(3) A manually operated brake on the main drive sheave with controls located near the operator.

"(4) On bicable tramways, an automatic track cable brake (See 2.7.2.3.2).

"2.5.7.2 *Stops.* Electric switches to stop the tramway shall be installed on both terminal platforms. One shall also be installed on the conductor's control board in each cabin (except where no conductor is required).

"The stopping system shall be so arranged that the tramway cannot be started by anyone until the device which stopped the tramway has been reset, and the operator has obtained clearance from the point at which the device was actuated.

"It is desirable that a wind gage be installed on the most exposed point along the tramway line. In such a case, a conspicuous warning device shall function to alert the operator when wind velocity reaches the established maximum. When wind conditions, as determined by such a device, or by observation of an attendant or the operator, make operations dangerous, the tramway should be unloaded and stopped.

"The tramway shall never be started except by the operator."

The section pertaining to acceleration and speed control for chair lifts, gondola lifts, and skimobiles stipulates:

"Specific provision other than brakes shall be made for maintaining normal speed under overhauling loads. The power developed by such overhauling load may be dissipated electrically, hydraulically, or pneumatically.

"In addition to this, provision shall be made for slowing and stopping the tramway drive automatically if the line velocity exceeds design values by more than 15 percent.

"The drive equipment shall be designed to accelerate the line smoothly to avoid discomfort to passengers under any loading conditions.

"Acceleration of the individual passengers at loading and unloading points:

"(1) Where the carriers are detachable, they shall be accelerated and decelerated to and from the rope speed at such rates as not to cause discomfort to the passengers.

"(2) Where carriers are fixed to the rope, there shall be an attendant to assist the passengers mounting and dismounting.

"The drive should be capable of rotating the unloaded system at reduced speed for rope inspection.

"In the case of systems involving detachable carriers, unbalanced loading shall be controlled by automatic car counters or other suitable devices."

For T-bar lifts, J-bar lifts, platter lifts, and similar devices, the sections pertaining to the hauling wire rope stipulates that:

"A copy of the wire rope manufacturers' specifica-

T-bar lift installation at Snow Ridge, Turin, N.Y., is 2400 ft long with vertical rise of 450 ft and capacity of 1200 skiers per hour.

Snow Ridge Ski Area

tions shall be available to the authority having jurisdiction. These specifications shall include size, grade of rope, construction, type of core, and breaking strength based on values as published in U.S. Department of Commerce, National Bureau of Standards Simplified Practice Recommendations 198-50.

"Before installation, the manufacturer shall test to destruction a sample of the rope furnished and submit a certified report of the test results. In the case of ropes of foreign origin, a test must be made by a reputable testing agency approved by the authority having jurisdiction in order to obtain adequate proof.

"Hauling hopes shall have a minimum static factor of safety of 5 when new, in that section in which the highest tension is encountered.

"Operating tension should be controlled by the use of a freely moving counterweight.

"Splicing of the main hauling rope should never be done by other than an experienced splicer acceptable to the authority having jurisdiction. If a breakdown occurs during operations and it is impossible to obtain an acceptable splicer without delaying resumption of operations, the splice shall be made by an experienced splicer who shall follow the standard printed instructions of the wire rope manufacturer for the 'long' splice. This splice shall be inspected by an acceptable splicer at the earliest opportunity."

A proper safety stop (or safety gate) is an essential requirement for all fiber rope tows. The following provision is made in section 5.5.23 of the code:

"On the uphill side of the unloading area there shall be a safety gate or other device installed across the tow path so that any skier in contact with and being pulled by the hauling rope will contact it and actuate it in such a manner as to stop the tow. This safety gate shall be so located and so actuated that it will stop the tow before the skier contacting the safety gate has traveled more than two-thirds of the distance between the safety gate and the first sheave, or other obstruction. This stopping distance shall not be exceeded even though the skier contacting the safety gate is the only skier on the tow at the time and the tow is operated at maximum speed. Safety gates and other safety stops shall be so arranged that they shall 'fail safe,' i.e., if they are improperly adjusted or for any reason malfunction, the tow shall stop and remain inoperative."

The table of contents contains some 190 sections, consequently space will not permit any further elaboration here. The four requirements quoted above were picked at random as illustrations and not necessarily because of their relative importance.

The photographs illustrating this article show some of the typical tramways included in the scope of this standard.

Recognizing that the industry dealing with uphill recreational transportation has now reached such proportions as to require safeguards for the protection of the public and progress of the industry, the operators, designers, governmental agencies, manufacturers, and users of these devices voluntarily participated in the preparation of this safety code. The committee anticipates the issuance of a first revision within a period of two to three years. Experience gained in the meantime should be extremely valuable and it is hoped that those affiliated with the industry will submit their criticisms and constructive suggestions to the committee chairman.

Snow Ridge

Rope tow at the Snow Ridge Ski area. The new safety standard provides for testing the ropes before installation, for control of operating tension, and for proper handling of repairs. It also provides for safety gates and for automatic stopping of the tow.

Standard Data Will Help in SHOCK AND VIBRATION MEASUREMENT

by C. S. DUCKWALD
Mechanical Engineering Laboratory
General Electric Company

WHEN THE MANUFACTURERS of auxiliary equipment for shock and vibration measurements use the new American Standard S2.4-1960, the customer using the equipment will be able more accurately to factor-in the equipment's characteristics when analyzing data as well as when deciding on instrumentation. Because the user was kept in mind by the writing group that prepared the standard, the document explicitly states how the manufacturer's information as to the electrical and physical characteristics of his equipment should be presented in his technical literature (sales bulletins and instructional material). This information is essential if the user is to obtain an accurate, meaningful interpretation of the shock and vibration data.

By following the recommendations of the new standard (American Standard Method for Specifying the Characteristics of Auxiliary Equipment for Shock and Vibration Measurements, S2.4-1960), a manufacturer of auxiliary equipment can easily increase his sales. Many users will not, or cannot, go through the time-consuming process of obtaining more complete data directly from the manufacturer; therefore, they order only that equipment for which they have complete data on hand. Also, many users assume that when a pertinent piece of information is not included in a manufacturer's literature, the omission has been intentional, indicating, they believe, that the information would shed an unfavorable light on the equipment the manufacturer is trying to sell.

The engineering effort that is being spent in reducing the size and weight of power-producing and thrust-producing equipment has increased the seriousness of the shock and vibration problem. The vibration energy generated per unit of rated horsepower or rated thrust seems to be increasing as the size of equipment is made smaller, probably because of the increased speeds involved. This, coupled with the fact that the equipment is lighter in weight per unit of rating, results in greatly increased vibration amplitudes. The net result is that shock and vibration have become among the most serious environment hazards now affecting the reliability of the associated control and guidance equipment.

Equipment for measuring shock and vibration is continually being improved. In addition to the increasing importance of more data on the dynamic effects mentioned above, there is an urgent need for information leading to a better understanding of the effects of explosion on military and atomic energy devices.

The role of auxiliary equipment in shock and vibration measurements is shown by the block diagram in Figure 1. Figures 2, 3, 4, and 5 show representative instrumentation grouping. In each of these groups the characteristics of the auxiliary equipment could have

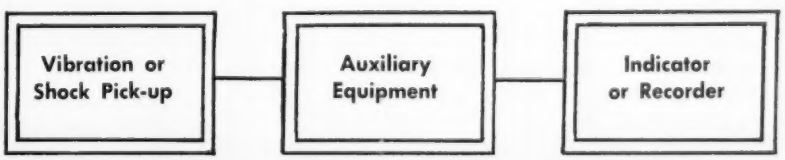


Figure 1: *Diagram shows important role of auxiliary equipment, which passes along the shock or vibration detected by the pickup to the indicator or recorder which makes the record available for use.*

a profound effect upon the meaning of the final measurement.

In Figure 2, the shock and vibration pickup is a wire strain-gage accelerometer. The auxiliary equipment is the strain analyzer which contains the carrier frequency oscillator, the signal amplifier and demodulated circuits, and the pen drive power for the direct-writing strip-write recorder used for indicating the acceleration.

In Figure 3, the shock and vibration pickup is a small barium titanate-type accelerometer. The recording equipment is a high-speed direct-writing strip-chart recorder. Here, the auxiliary equipment is the remotely mounted high-input impedance preamplifier and its power supply.

In Figure 4, the shock and vibration pickup is a small barium titanate-type accelerometer. The recording equipment is a cathode ray oscilloscope with a camera attachment. Here the auxiliary equipment is the high-input impedance preamplifier and power supply and cathode ray oscilloscope.

In Figure 5, the vibration pickup is a capacitor-type proximity sensor and the indicating instrument used in this case is a cathode ray oscilloscope. Between these two pieces of equipment is the auxiliary equipment. This item contains a radio-frequency carrier oscillator, a capacitance bridge, signal amplifier and a demodulator, and also a carrier modulator for static measurements.

In each of the above systems it is essential to know the characteristics of the auxiliary equipment, that is, to have answers to such questions as: "What is the input (i.e., bridge, half bridge, high impedance)? Will the demodulator give positive and negative indications? Is it possible to obtain static or direct-curvant readings from the equipment?"

THE PURPOSE of American Standard S2.4-1960 is to provide a uniform terminology and format for presentation of the performance characteristics and environmental capabilities of this auxiliary equipment. The standard does not form an iron-clad rule as to which of the characteristics the manufacturer should include in his description, however, nor does the standard in any way become a performance standard in the usual sense of the word.

The standard itself contains the following four main headings.

(1) Introduction
(2) Purpose and Scope
(3) Definitions and Terms
(4) Specifications

The material covered under (3), Definitions and Terms, gives a concise and clear definition of many of the terms pertinent to this standard, which in many instances are not found in other standards. The following is an example of one of the definitions written especially for this standard:

"3.10 *Transfer Characteristic.* The transfer characteristic of an auxiliary equipment is a stated functional relation between the input and output signals and is usually specified in terms of both gain and phase shift as a function of frequency.

"NOTE: Auxiliary equipment, in performing its normal function, modifies the input signal in some manner to give the output signal. This modification may take the form of a constant voltage gain, a voltage gain that changes with frequency, a voltage gain that changes with the logarithm of the input signal, or a voltage gain that changes according to some other function of the input signal. The character of this input-output signal modification is the 'transfer characteristic' of the auxiliary equipment."

Under (4), Specifications, are found the actual specifications that spell out how the characteristics should be presented. The sub-headings in this section are:

4.1 Functional Description
4.2 Input Characteristics
4.3 Output Characteristics
4.4 Transfer Characteristics
4.5 Environmental Limitations
4.6 Power
4.7 Physical Characteristics

Section 4.2.1 is a good example of how the fundamental purpose of this standard is accomplished. This

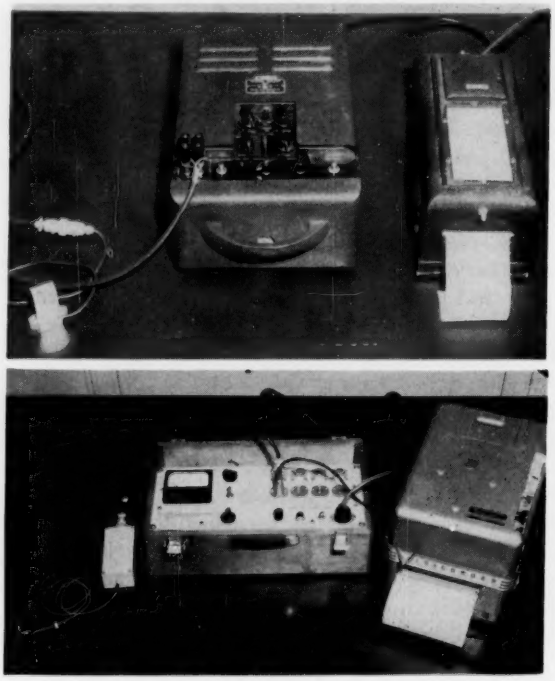
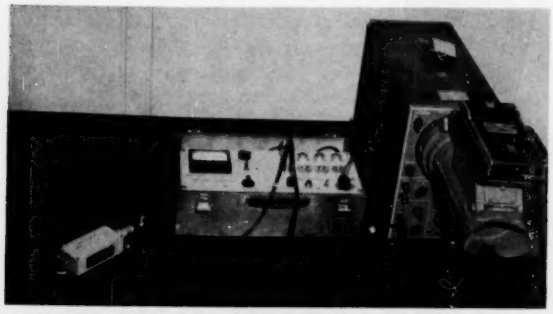


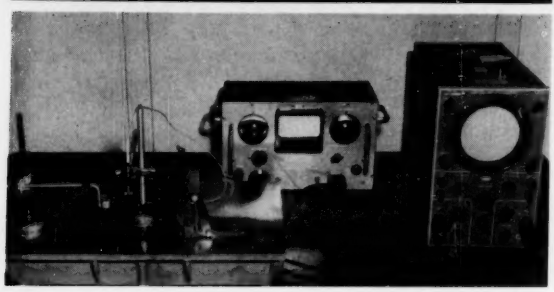
Figure 2 (top): Instrumentation for low-frequency shock and vibration measurements (l to r) wire strain gage-type accelerometer, strain-gage control circuit and amplifier, direct-writing strip-chart recorder.

Figure 3: Instrumentation for medium-frequency shock and vibration measurements (l to r) barium titanate-type piezoelectric accelerometer, high input-impedance preamplifier, power supply, high-speed direct-writing strip-chart recorder.

Figure 4: *Instrumentation for high-speed shock and vibration measurements (l to r) barium titanate-type piezoelectric accelerometer, high-impedance preamplifier, power supply, cathode-ray oscilloscope with camera attachment.*

Figure 5 (below): *Proximity-type instrumentation for vibration mode-shape measurements (l to r) capacitance-type displacement pick-up, capacitance bridge balance, control unit, cathode-ray oscilloscope for observing amplitude and phase changes.*





section, as given verbatim in the standard, is as follows:

"4.2.1 *Input Connection.* The type of input circuit connections should be specified, preferably by a schematic diagram. In specifying the input circuit connection, state whether the input circuit is balanced or unbalanced to the ground and whether it is isolated from the chassis or connected to it at the center tap or at one terminal.

"For amplitude-modulating carrier systems, state the type of modulating components the input will accommodate. Examples of such circuits are a full bridge, a half bridge (Wheatstone bridges), and a differential transformer. State the type and purpose of any internal balance controls provided. Show a schematic diagram of the input circuit, indicating the amplifier input, oscillator signal input, and balancing controls.

"For frequency or phase-modulating carrier systems, state the type of modulating components the input circuit will accommodate. Examples of such components are capacitance variation transducers and inductance variation transducers. State type and purpose of any internal balance controls provided. Show a schematic diagram of the input circuit, indicating the carrier signal connection, the carrier amplifier input connection, and also indicating the location, type, and purpose of the tuning or balancing controls."

In addition to the electrical characteristics, this standard also specifies how the environmental capabilities of equipment should be presented. An example of this type of specification is the following section:

"4.5.4 *Vibration.* The equipment and its cables should be subjected to a stated vibratory motion at a level representative of service conditions and the output signal due to this motion should be given. For this test the equipment and its cables should be mounted as they will normally be used, with input and output terminated by specified impedances.

"The response to this vibration should be shown graphically as a function of frequency. The output signal or voltage (ordinate) scale length should be plotted logarithmically with a 10:1 voltage ratio (20 db) equal to not less than one inch. The frequency scale (abscissa) should be logarithmic with a 10:1 frequency ratio equal to not less than one inch."

This new standard is sponsored jointly by the Acoustical Society of America and The American Society of Mechanical Engineers and was prepared by a writing group made up of individuals who are experts in the field of shock and vibration. In selecting this group, an effort was made to obtain some members who would present the thinking of the equipment manufacturers and others who would have as their primary interest the use of the equipment and the ultimate interpretation of the results.

The actual writing of the standard was extended over a period in excess of three years. Before the writing group considered a section complete, an effort was made to have a unanimous decision as to that section's contents. After the writing group felt that the standard was complete, it was then circulated among a broad group of individuals who would be rather intimately concerned with the use of the standard. The suggestions received from this group were very carefully considered by the writing group and, where possible, were incorporated into the standard.

The final draft was then submitted to Sectional Committee S2, Mechanical Shock and Vibration, for approval. In order to obtain unanimous approval of the S2 committee, it was necessary for the writing group to rewrite a few of the sections so that they would not conflict with other American Standards.

The members of the writing group were:

C. S. Duckwald, *Chairman*, General Engineering Laboratory, General Electric Company; Dr J. C. Johnson, Willow Run Research Center, University of Michigan; S. Levey, Missile and Space Vehicle Department, General Electric Company; Greer Ellis, Ellis Associates; Irwin Vigness, Naval Research Laboratory; Karl Unholtz, M-B Manufacturing Company; Fred Mintz, Lockheed Aircraft Corporation; J. J. McDonald, Consolidated Electrodynamics Corporation; E. J. Keane, Radio Shock Corporation.

Mr Goeltz conducting the CMC workshop on standards manuals.

THE COMPANY'S STANDARDS MANUAL

by PHILIP H. GOELTZ

AFTER A COMPANY standards department has been set up and has started its work, the question arises: What do we do to make the standards we have developed available to those in the company who need them? An answer that has been found effective by many companies is the standards manual.

Some of the problems the company standards engineer faces in handling the standards manual are discussed in this paper, as well as what the Gleason Company has done to arrive at possible solutions. There is no attempt, however, to infer that the solutions suggested are the only good ones.

The use of standards at the Gleason Works dates back to the early 'twenties, and over a period of 35 years standardization has experienced steady growth and development. The company's work in standardization is limited to engineering standards. This covers component parts, design practices, and manufacturing techniques. The scope of the ensuing comments will be limited to engineering standards, and the examples cited will be taken from our experience in this field only.

One of the problems of any standards engineer centers in the mechanics of setting up and maintaining company standards. This problem may be broken down into three principal areas: (1) The format of the standards manual; (2) The distribution and maintenance of the standards; (3) The revision of the standards.

THE STANDARDS MANUAL

Format

In determining the format of a standards manual, several factors should be considered.

(*a*) *Convenience of Handling*

Standards manuals are generally used by a relatively large number of people with widely diversified interests and varying degrees of interest in their use—engineers, designers, draftsmen, production personnel, stockroom personnel, purchasing agents, shop foremen, and others. Therefore, the format should allow the greatest convenience in handling for the group which will give it the greatest amount of use.

In our organization, the favored group was the design and drafting group. The ideal arrangement appeared to be the use of books containing 6 x 9-in. pages, with the material distributed through several volumes. This proved to be convenient for handling on drafting boards and desks and had definite advantages in our reproduction process, as will be outlined later.

MR GOELTZ is chief standards engineer, Gleason Works, Rochester, N. Y. This second paper in the series on specific phases of a company standards program was presented by Mr Goeltz at the Spring Meeting of ASA's Company Member Conference in Philadelphia, May 2 and 3, 1960.

An introduction to the series by Philip Callan, Eastman Kodak Company, was published in the July issue (page 207). The first article in the series, on the problems of starting a standards program, by Ernest E. Mohr, appeared in the August issue (page 238).

(*b*) *Arrangement of Material*

Standards material may be arranged in many different ways depending upon the specific make-up of an organization's standards. In our case, since we are manufacturers of machine tools and are dealing with component parts as well as design and manufacturing practices, our over-all breakdown is made into three volumes and twelve divisions, some of which are further divided into two sections. This is done in order to separate design practice information from charts relating to purchased or manufactured parts. A fourth volume is devoted exclusively to arbors, chucks, and holding equipment.

(*c*) *Convenience for Expansion*

The arrangement just described has quite an advantage when expansion becomes necessary. An additional volume can always be added and sections readjusted among the increased number of volumes. This involves only a renumbering of pages and an index change to give a 25-percent expansion all through the line. This in no way affects the basic arrangement of the standards manual, and our experience has shown that in a very short time our people become readjusted to the shifting of sections from one volume to another.

Types of Binders

The possibilities for types of binders for the standards manual are numerous. From the very beginning, we acted on the assumption that the binder must be of a loose-leaf type to allow the insertion of changes and new material.

In solving our problem, we investigated many types. One of the requirements arrived at was that the book should have maximum wearing quality and resistance to abuse. A reasonable test was that the user had to be able to pick up the book by grasping one sheet and not have that sheet tear out. It was found that this could only be done by using a multi-ring binder (18 rings). This then limited us to a maximum ring size of one inch. After investigating various types of covers, it was finally decided to use a moderately priced 18-ring binder with a cover of peroxlyn-impregnated paper made with one piece cut flush construction. These binders have proven to be quite durable and still look well after years of daily use.

Types of Paper

The type of paper may be determined by considering the following:

(*a*) It should be opaque
(*b*) It should be strong
(*c*) It should be white
(*d*) It should have a smooth finish
(*e*) It should take ink easily for ease of offset printing
(*f*) It should have minimum thickness consistent with (*a*) and (*b*). This will govern the capacity per volume.

Method of Reproduction

Although the page size for our standards manuals is 6 x 9 in., all work on the originals is done on 9 x 13½-in. sheets. This enlargement permits finer detail in the preparation of illustrations. These originals are made either with ink on cloth or typed and inked on white bond paper, depending on whether, at a later date, blueprints of these sheets may be required. Chart material is made in ink with Leroy guided lettering. Written material is typed. Corrections and changes are often made by the use of paste-ups; this permits a great deal of versatility.

Two methods of reproduction are available. One, known as the Ektalith process, consists of photographing two of the original sheets on a photosensitive multilith mat. With a reduction in size to 66 percent, two 9 x 13½-in. originals are reproduced on a 10 x 15-in. multilith mat. Development of this mat is made by a wet process.

Another method, the Zerox process, reduces the two original sheets by the copy camera onto a 10 x 15-in. electrically charged aluminum plate. This plate is then developed by a dry process and the image transferred to the multilith mat.

The mat, prepared by either of the above methods, is then used for printing by the offset method. Two 6 x 9-in. pages are printed simultaneously from a single mat by a multilith printer. This, of course, speeds up the printing process and reduces the cost per page. After multilith printing, the sheets are cut, punched, and collated.

THE DISTRIBUTION AND MAINTENANCE OF STANDARDS

Who Should Receive Standards Manuals?

Engineers, designers, detail draftsmen, purchasing, production, and inspection personnel, and shop foremen receive all or part of our standards manuals.

It is our philosophy that anyone who has need for and can advantageously use the material contained in one or more of our standards manuals is entitled to and should have those manuals. However, we do not attempt to distribute these too freely and without proper consideration, since the cost of handling and maintenance must be considered.

Responsibility for Standards Manuals

The assignment of standards manuals is always made in the name of an individual. Each book is serial-numbered and charged out against a specific person. The books must not be taken from the plant, and the holder of the books must be able to produce them upon demand.

Mechanics of Distribution and Maintenance

The job of checking out, distributing, and maintaining the standards manuals is assigned to a member of the Standards Department, usually a standards

clerk or draftsman. He is given the task of keeping up to date the list of personnel who have received books. When holders of standards books change jobs, the standards clerk must handle the necessary change of records. When a person leaves the organization, the standards clerk must see to it that the standards manuals held by that person are returned to the Standards Department before that person leaves the company.

When new or revised standards have been printed, the standards clerk must see to it that they are distributed and properly inserted in all binders and that the old sheets are removed and destroyed. Each release is accompanied by a change notice enumerating the pages removed or added, and briefly summarizing the changes. Experience has indicated that the engineer, designer, or draftsman cannot be depended upon to make the proper insertion or deletion of these pages.

REVISION OF STANDARDS

Method of Handling Revisions

In the case of engineering standards which are of interest to design, manufacturing, production, and inspection groups, the request for a standards change may arise in any of these areas. These changes might stem from a new conception of a design, an improvement in manufacturing methods, a condition of economics in production, or a need for increased accuracy.

Such requests are generally assigned to a member of the Standards Department for investigation. He will consult with the group seeking the revision as well as any other group having an interest in this standard. After all the facts have been assembled, a decision may be made directly by the standards engineer. However, for changes of a major nature, a conference of the heads of all departments concerned may be required to determine whether revision is warranted and the extent to which it should be carried out.

Provisional or Tentative Standards

In some instances, due to possible instability of a design or a condition of uncertainty in a problem, it might not be desirable to establish a fixed standard too early in the period of development. In this case, a provisional or temporary standard may be set up. These we call "engineering procedures." They are generally set up by the Standards Department to cover the problem at hand. Copies are circulated through Design Engineering, Methods Engineering, and Shop. After a reasonable period of time, the engineering procedure either must be revoked or must be changed to a regular standard and incorporated into the standards manual. At this time, certain revisions or modifications may be made if during the use of the engineering procedure the need for such modification has become apparent.

Articles on Company Standards

For those who are interested in how other companies have organized their standards work, the following articles in past issues are recommended:

RCA Victor Division—"Where Should Standardization Activity Fit Into an Industrial Organization?" by T. J. Finan (February 1950, p 34)

E. I. du Pont de Nemours & Co—"Du Pont Engineering Standards" (March 1950, p 59)

IBM—"Engineering Standards at IBM," by Curt I. Johnson (December 1950, p 315)

International Harvester Co—"IH Cashes In," (September 1951, p 269)

Fairbanks, Morse & Co—"Administrative Standards in Business and Industry," by L. M. Dalcher (January 1952, p 11)

Western Electric—"Western Electric's Service with Standards," by Kenneth B. Clarke (October 1952, p 333)

Jeffrey Mfg Co—"How Jeffrey Organized a Company Standards Department," by W. B. Fleming (April 1954, p 109)

Ansco—"The Use of Standards in a Chemical Plant," by H. A. Burns (January 1956, p 9)

Sandia Corp—"The Special Weapons System of Standardization," by H. C. Biggs (February 1956, p 37)

General Precision Equipment Corporation—"Link Aviation's New Standards Program," by L. G. Harrison (March 1956, p 75)

Raytheon Mfg Co—"Why Standardization at Raytheon?" by H. B. Macomber (August 1957, p 225)

Diamond Alkali Co—"How to Set Up a Standards Program for a Small Company," by B. Scott Liston (December 1958, p 353)

Rockwell Mfg Co—"The Case for a Decentralized Standardization Program," by Fulton R. Magill (February 1959, p 37)

A limited number of copies of each of these issues is available at 75 cents per copy.

Reprinted from the June 1960 issue of Industrial Power Systems, *published by General Electric Company, Schenectady, N.Y.*

Substantial system savings result from . . .

Application and Economics of American Standard Transformers

by S. A. CRESON

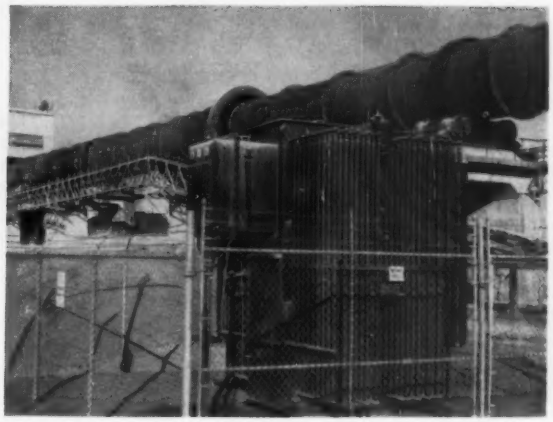


Figure 1. *Use in industrial applications of transformers that conform to American Standards offers the user flexibility and cost savings. The typical cement plant installation pictured here indicates a trend toward use of higher rated transformers.*

BOTH UTILITY and industrial power systems can realize substantial savings during "beefing up" construction activity by using transformers conforming to American Standards. The standard referred to here is C57.12, Sections 10-12, originally approved in 1954 by the American Standards Association and now revised as American Standard C57.12.10-1958. This standard covers requirements for transformers of 501- through 5000-kva single-phase, and 501- through 10,000-kva three-phase as shown in Table 1. It includes high-voltage ratings of 2400 to 67,000 volts and low-voltage ratings of 480 to 14,400 volts.

The purpose of this transformer standard is to establish an acceptable set of specifications to cover the basic electrical, mechanical, and thermal characteristics of transformers required by a majority of users, and yet provide for flexibility of application. The manufacturer can, pursuant to these requirements, standardize and mass-produce many mechanical components, reduce stocks, and better utilize factory space, combine engineering procedures, and actually pre-design certain units. The creative engineering talents available to the manufacturer can be more efficiently used in research and development to bring to the consumer less expensive transformers of higher quality.

Savings Passed to Customer

The savings achieved are passed on to the customer, and shipping cycles are faster. Existing system conditions need not exactly match transformer nameplate ratings to permit use of transformers conforming to the American Standard. For example, if the required capability of a planned substation does not exactly coincide with that accorded by standard kva size transformers, the saving in price will usually permit the purchase of the next higher size standard transformer. Assume, for instance, the need for a 3000-kva station using a three-phase transformer. We know that the next smallest size covered by the standards is a 2500-kva unit, and that the installation of a

3750-kva unit, the next size standard transformer would result in 750 kva over the required capacity.

At first glance it would appear that the extra 750 kva would increase the cost of the transformer and neutralize any benefits gained by having the extra kva in reserve. But with the reduction in cost due to using a standard, the 3750-kva transformer would cost only a small amount more than the 3000-kva unit. A substantial reserve margin is achieved at a very low cost. This additional 750 kva will then be available for emergencies, and to offset the common tendency to underestimate system load growth. Once a transformer is chosen so that its kva rating agrees with one of the standard models, the matching of system voltage will usually follow.

Optional Ratings on High Side

The use of transformers of larger kva sizes and higher voltages is becoming more common as the

TABLE I—Range of Kva Ratings Covered by C57.12.10-1958

1. Single-phase

High-voltage Rating, Volts	*Low-voltage Rating, Volts*			
	480 600	2,400/4,160Y 2,520/4,360Y 4,800/8,320Y 5,040/8,720Y	6,900/11,950Y 7,200/12,470Y 7,560/13,090Y 7,620/13,200Y 7,970/13,800Y	12,000 12,600 13,200 14,400
	Kva Ratings			
2,400/4,160Y	833			
4,800/8,320Y	833			
6,900/11,950Y 7,200/12,470Y 7,620/13,200Y 12,000, 13,200, 13,800	833, 1,250	833–2,500		
22,900	833, 1,250	833–2,500	833–2,500	
26,400, 34,400	833, 1,250	833–2,500	833–3,333	833–3,333
43,800	833, 1,250	833–2,500	833–5,000	833–5,000
67,000		833–2,500	833–5,000	833–5,000

2. Three-phase

High-voltage Rating, Volts	*Low-voltage Rating, Volts*				
	480Y/277 480 600	2,400, 2,520 4,160Y/2,400 4,360Y/2,520	4,800, 5,040 8,320Y/4,800 8,720Y/5,040	6,900, 7,200, 7,560 12,470Y/7,200 13,090Y/7,560 13,200Y/7,620 13,800Y/7,980	12,000, 12,600 13,200, 14,400
	Kva Ratings				
2,400	750–1,500				
4,160, 4,800	750–1,500				
6,900, 7,200	750–2,500*	1,000–3,750*			
12,000, 13,200, 13,800	750–2,500*	1,000–7,500*			
22,900		1,000–7,500*	1,000–10,000	1,000–10,000	
26,400, 34,400		1,000–7,500*	1,000–10,000	1,000–10,000	1,000–10,000
43,800		1,500–7,500*	1,500–10,000	1,500–10,000	1,500–10,000
67,000		1,500–7,500*	1,500–10,000	1,500–10,000	1,500–10,000

Note 1: All voltages are △ unless otherwise indicated.
Note 2: Kilovolt-ampere ratings separated by a hyphen indicate that all intervening standard ratings are included.
* Ranges of kva ratings and voltage ratings for which 2000 kva rating is available.

average industrial grows in size. The larger industrials are now buying power at higher voltages to take advantage of better power rates and they step this voltage down to their distribution voltage to feed their load centers. It is in this area that the optional high voltages, nonstandard impedances and turns ratio become important.

The American Standard does not provide for optional low-voltage ratings, but the wide range of optional high-voltage ratings that are available afford a sufficient variation of turns ratios to yield a good selection of "nonstandard" low voltages. For example, if the system voltage is 34,400 volts, and the desired low voltage is the "nonstandard" rating of 2300 volts, a standard unit can still be used by choosing an optional high voltage. The turns ratio of the desired transformer is 34,400 divided by 2300, or 14.96 to 1. The nearest standard low voltage is 2400 volts and this, multiplied by the turns ratio, will give the optional high voltage required. $2400 \times 14.96 = 35{,}900$. Thus, a transformer rated 35,900 volts to 2400 volts, when excited at 34,400 volts, will produce an output voltage of 2300 volts.

Paralleling Transformers

If existing transformers exhibit nonstandard impedances, they can, under most conditions, be paralleled with "standard" units. When transformers of different impedances are paralleled, the total load is divided in inverse proportion to the percent impedance. Thus, when a standard unit with an impedance of six percent is paralleled with a nonstandard unit with an impedance of seven percent, the lower impedance unit would carry 53.8 percent of the total load.

$$\frac{7 \times 100\%}{6 + 7} = 53.8\%$$

The nonstandard unit would then carry 46.2 percent of the total load.

Since a transformer can be loaded to 110 percent of nameplate rating with only moderate sacrifice of life, it is possible, though perhaps not desirable, especially in warm climates, to parallel two transformers, even though the impedance differential between them is as much as 22 percent.

Two other factors must be considered in paralleling transformers: (1) phase displacements, and (2) turns ratio.

If phase displacement is a problem, it can be solved by the installation of an internal terminal board in a three-phase unit (by the manufacturer), or by external connection on single-phase units in the field.

When two transformers of different turns ratio are excited in parallel, there naturally tends to be a difference in the output voltages of the two machines. The result is the flow of an internal, non-working current through the parallel connection. This current can cause substantial heating, and is limited only by the impedance of the transformers. Considering, however, the 10 percent overload mentioned above, the turns ratios may be off as much as 2.1 percent and the two machines will still operate satisfactorily, but with a moderate amount of circulating current and consequent heating.

Options Provide Versatility

The American Standard for medium transformers was designed to benefit the greatest majority of users. There are, therefore, many optional features available beside the optional high voltages already mentioned. These include fans, or provisions for future fans, alternate types of oil preservation, and series-multiple low voltages. The American Standard thus allows considerable versatility of application, affords a cost saving over nonstandard units, and provides interchangeability, both electrically and mechanically, between designs of different manufacturers.

American Standards in the C57.12 group on distribution, power, and regulating transformers and reactors other than current-limiting reactors, are as follows:

C57.12.00-1958 General (Section 00) including C57.12.00a-1960, Supplement	$2.00
C57.12.10-1958 Transformers, 67,000 Volts and Below, 501 Through 10,000 kva, 3-Phase; 501 Through 5,000 kva, 1 Phase (Section 10)	1.50
C57.12.20-1959 Overhead-Type Distribution Transformers, 67,000 Volts and Below, 500 kva and Smaller (Section 20)	2.30
C57.12.30-1958 Three-Phase Load-Tap-Changing Transformers, 67,000 Volts and Below, 1,000 kva Through 10,000 kva (Section 30)	1.50
C57.12.80-1958 Terminology (Section 80)	1.00
C57.12.90-1958 Test Code (Section 90)	2.20
C57.92 Guide for Loading Oil-Immersed Distribution and Power Transformers, Appendix to C57.12 standards	2.00
C57.96 Guide for Loading Dry-Type Distribution and Power Transformers, Appendix to C57.12 standards	1.40

A Proposed American Standard, Secondary Network Transformers, Subway and Vault Types (Liquid Immersed), is also available. This is identified as EEI 57-7; NEMA TR4-1957, ASA C57.12 (Section 40). Copies are available at 80 cents each.

• A three-post binder, bound in black imitation leather, with "American Standards" lettered in gold, capacity 2 inches, can be purchased from ASA. An open-window pocket on the spine makes it possible not only to identify the American Standards included in the binder but also to change the identification whenever the standards are changed. Binders are available at $3.50 each.

PRELIMINARY PROGRAM

Eleventh National Conference on Standards

Sheraton-Atlantic Hotel, New York

October 25-27, 1960

Tuesday, October 25

10:00 A.M. SESSION 1

Presiding
John R. Townsend, President, American Standards Association; Special Assistant to Director of Research and Engineering, Department of Defense, Washington, D.C.

Chairman
S. H. Watson, Manager, Corporate Standardizing Division, Radio Corporation of America, Camden, N. J.

Keynote Address
Vice Admiral Dorsey Foster, USN (Ret), Vice-President, Corporate Planning, Radio Corporation of America, Camden, N. J.

ASA and Industry's Responsibility
Frank H. Roby, Vice-President, American Standards Association; Executive Vice-President, Federal Pacific Electric Corporation, Newark, N. J.

Review of the Year
Vice Admiral George F. Hussey, Jr, USN (Ret), Managing Director, American Standards Association

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1:30 P.M. SESSION 2
Sponsor: Department of Defense, Standardization Division

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3:15 P.M. SESSION 3
Sponsor: Department of Defense, Standardization Division

Wednesday, October 26

9:00 A.M. SESSION 4

How ASA Serves Company Standards Needs
Sponsor: ASA Company Member Conference

Chairman
Dwight F. Hollingsworth, Chairman, Company Member Conference; Principal Standards Engineer, E.I. du Pont de Nemours & Company, Wilmington, Del.

Speakers
Frank J. Heller, Secretary, Engineering Standards Committee, Phillips Petroleum Company, Bartlesville, Okla.

F. C. Frost, Administrative Staff, American Standards Association

Gearing American Standards and ASA Services into Company Standards Programs
Rutherford H. Fenn, Pitney-Bowes Inc, Stamford, Conn; and George Trumbour, Quality Control Manager. Polaroid Corporation, Cambridge, Mass.

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10:45 A.M. SESSION 5

Creating Standards Programs in New Areas—Part I
Sponsor: ASA Company Member Conference

Chairman
Dwight F. Hollingsworth, Chairman, Company Member Conference; Principal Standards Engineer, E.I. du Pont de Nemours & Company, Wilmington, Del.

Speakers
Dr Joseph W. Barker, Acting Director, Data Processing Group, Office Equipment Manufacturers Institute, New York, N.Y.

Business meeting and inauguration of CMC officers for 1960-61

11:45 A.M. GENERAL RECEPTION

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12:15 P.M. AWARDS LUNCHEON

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2:00 P.M. SESSION 6

Creating Standards Programs in New Areas—Part II

Sponsor: ASA Company Member Conference

Chairman
Dwight F. Hollingsworth, Principal Standards Engineer, E.I. du Pont de Nemours & Company, Wilmington, Del.

Standardization in the Use of Microfilm for Engineering Drawings in the Bell System
C. E. Nelson and W. J. Locke, Technical Staff, Bell Telephone Laboratories, Murray Hill, N.J.

New Areas for Standards at the Company Level
Dwight F. Hollingsworth, E.I. du Pont de Nemours & Company, Wilmington, Del.

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3:45 P.M. SESSION 7

Sponsor: National Association of Purchasing Agents

Co-Chairmen
William H. Old, Director of Purchasing, The Babcock & Wilcox Company, New York, N.Y.; Peter P. Heaney, Director of Purchasing, De Jur Amsco Corporation, Long Island City, N.Y.

Thursday, October 27

9:00 A.M. SESSION 8

Quality Standards in Manufacturing

Sponsors: American Society for Quality Control; American Statistical Association

Chairman
Harold Dodge, Chairman, Standards Committee, American Society for Quality Control; Professor, Mathematics and Applied Statistics, Rutgers University

Vice-Chairman
Frank McGinnis, Director, Reliability and Quality Control, Sperry Gyroscope Company, Great Neck, L.I., N.Y.

Speakers
Charles A. Bicking, Manager, Quality Control, The Carborundum Company, Buffalo, N.Y.

Dr R. B. Murphy, Quality Results Engineer, Bell Telephone Laboratories, New York, N.Y.

Frank McGinnis, Director, Reliability and Quality Control, Sperry Gyroscope Company, Great Neck, L.I., N.Y.

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10:45 A.M. SESSION 9

The Executive Viewpoint on Standards

Chairman
Vincent deP. Goubeau, Vice-President, Radio Corporation of America, Camden, N.J.

Speakers
John W. Young, Vice-President, Quality and Logistics, North American Aviation, Los Angeles, Calif.

K. A. Kettle, Associate Director, Design and Construction, Union Carbide Chemicals Company, South Charleston, W. Va.

W. G. Wright, Vice-President, Operations, General Telephone and Electronics Corporation, New York, N.Y.

Milton I. Ross, President, Milton Ross Metals Company, Hatboro, Pa.

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1:30 P.M. SESSION 10

Accomplishments, Developments, and Need for Standards Activities in the Building Industry

Sponsor: Modular Building Standards Association

Chairman
Byron Bloomfield, Executive Director, Modular Building Standards Association; Secretary, ASA Sectional Committee A62

The Housing Industry—Size and Character as Influenced by Completed Standards Work
R. J. Johnson, Director of Research, National Association of Home Builders, Washington, D.C.

Producer Attitudes Towards Standards
E. A. Lundberg, President, Producers' Council, Washington, D.C.

Description and Illustration of the AIA Building Products Registry as Related to the Function of Architectural Firms
T. W. Dominick, Director, Membership Services, American Institute of Architects, Washington, D.C.

Contractor's Views on the Effects of Standards Activities—Influence of Modular Measure on Construction Procedures
J. M. Bowersox, Assistant Building Division Manager, Associated General Contractors of America, Washington, D.C.

For information about registration fees, exhibits, and similar details, write the American Standards Association, 10 East 40 Street, New York 16, N.Y.

ASTM REPORTS ON STANDARDS

USE OF STANDARDS, specifically ASTM standards, as technical assistance to underdeveloped countries was suggested by F. L. LaQue, retiring president of the American Society for Testing Materials, at the Society's 63rd annual meeting in June. ASTM standards, Mr LaQue said, should provide a wealth of information on materials not available in any other form, and would be a sure way to put international trade in materials on a sound base. Mr LaQue is vice-president for development and research of The International Nickel Company, New York.

ASTM already is international in scope, Mr LaQue pointed out. The Society has members in more than 50 foreign countries; in 1959 it received more than 9,000 orders for publications from more than 65 foreign countries, from Afghanistan to the Windward Islands; and it is making substantial contributions to the work of the International Organization for Standardization, through the American Standards Association.

Explaining his suggestion, Mr LaQue said: "Our government is committed to a policy of providing technical assistance to other countries, and particularly to what are called 'underdeveloped countries.' In the field of materials, the 14,359 pages in the ten volumes of ASTM standards comprise the greatest concentration of immediately and practically usable information that it would be possible to furnish anyone needing such data. In most cases, no further work or search for data should be required to characterize a material needed for some specific purpose, whether it be concrete for a wall, steel for a bridge, or fuel for an engine."

To help promote the wider use of standards (ASTM standards particularly) abroad, there is a need to translate them into other languages, Mr LaQue said. Steps are already under way to do this for Latin America, he said, and urged that his successors follow this policy on a broad international scale.

A. Allan Bates, vice-president of research and development, Portland Cement Association, Chicago, was elected president of ASTM, his one-year term of office starting at the close of the annual meeting. Russell Wade Seniff, manager of research, Baltimore and Ohio Railroad, Baltimore, Md, was elected vice-president. Miles N. Clair, president, The Thompson & Lichtner Company, Brookline, Mass., is continuing as senior vice-president.

Dr Bates has been a member of ASTM since 1946 and of the ASTM Board of Directors since 1955. He has been active in ASTM work for many years as representative of the Portland Cement Association on Committee C-1 on Cement and in connection with Committee C-9 on Concrete. As chairman of the C-1 subcommittee on the cement reference laboratory, he has been especially active in developing the operations of this laboratory, involving the coordinated interests of private and governmental groups and agencies interested in testing cements and concretes. Dr Bates is a member of the Executive Committee of the Building Research Advisory Board of the National Academy of Sciences. He is a director of the American Concrete Institute and a member of a number of other technical societies concerned with materials.

In 1957, Dr Bates was a member of a delegation which, under the authority of the U.S. Department of State, went to South America to participate in a Pan American Conference in Rio de Janeiro, Brazil. The purpose was to discuss the possibility of coordinating engineering materials standards among the nations of the western hemisphere. Dr Bates acted as a representative of ASTM at Rio and also at a succession of subsequent meetings held in many of the capital cities of Latin American countries.

J. J. Kanter, chairman of ASA Sectional Committee B36, Standardization of Dimensions and Material of Wrought-Iron and Wrought Steel Pipe, was one of the six ASTM directors elected for three-year terms. Mr Kanter is directing engineer, materials engineering, Crane Company, Chicago. He is chairman of ASTM Committee A-1 on Steel and chairman of the Joint ASTM-ASME Committee on the Effect of Temperature on the Properties of Metals. In 1929, he was awarded the ASTM Dudley Medal for research on the creep of steel at high temperatures. He is a Fellow of the ASME, serving on its Boiler Code Subcommittee on Ferrous Metals, and has been active in ASA Sectional Committee B31, Code for Pressure Piping, as well as on Sectional Committee B36.

Among those honored at ASTM's annual meeting was L. J. Markwardt, consultant, Madison, Wisconsin, retired assistant director of the U.S. Forest Products Laboratory. Mr Markwardt, a member of the ASA Construction Standards Board, chairman of ASA Sectional Committee A14, Safety Code for Construction, Care, and Use of Ladders, and a member of ASA Sectional Committee O5, Specifications for Wood Poles, was elected honorary member of the Society.

Mr Markwardt joined ASTM in 1920 and has participated in all phases of Society activities. He has served as president, vice-president, and member of the Board of Directors, as well as member of a number of technical committees and officer of several. In 1943 he was honored by ASTM as the Edgar Marburg Lecturer. He is currently chairman of the U.S. Program Committee for technical forest products for the 5th World Forestry Congress to be held at Seattle this year.

Some 3,000 ASTM members, committee members, and guests attended the 37 technical sessions held during the week-long annual meeting. In addition, more than 1,000 meetings were held by subcommittees and subgroups of the ASTM technical committees whose task it is to keep ASTM standards up to date and to create new ones as needed by industry. Some of the important actions taken by these committees are reported below.

Steel, A-1

An American supervisory group to participate actively in the work of Technical Committee 17 on Steel of the International Organization for Standardization has been approved. An eight-man group will engage in this work under the auspices of the American Standards Association. This step marks a change in attitude of the American steel industry which until now had recommended only observer status in international standardization work.

As a result of discussions with the National Association of Chain Manufacturers, the scope of Subcommittee 27 on Steel Chain has been expanded to include chains manufactured by all processes. The subcommittee had been interested only in chain produced by welding. New projects include welded machine chains and coil chains, chains formed from wire, and chains formed from stampings.

The new Specification A 36 for Structural Steel has been approved. Likewise, the new Specification for High-Strength Low Alloy Structural Manganese Vanadium Steel has been approved under the ASTM Designation A 441-60T. This is intended primarily for use in welded bridges and buildings where savings in weight or added durability are important.

The Specification for Quenched and Tempered Steel Bolts and Studs with Suitable Nuts and Plain Hardened Washers (A 325-58T) is to be printed in revised form late this year. The new bolt covered by the American Institute of Steel Construction pamphlet for structural bolted joints will be included.

New testing and inspection requirements for cold-drawn steel wire for concrete reinforcement (A 82) and for welded steel wire fabric for concrete reinforcement (A 185) have been approved by the steel reinforcement subcommittee.

The Special Subcommittee on Bearing Steels was organized by Committee A-1 in 1942. From 1948 to 1954 this special subcommittee was relatively inactive. As a result of recent intense activity, however, the special subcommittee has been recognized as a permanent group and renamed Subcommittee XXVIII on Bearing Steels.

Cement, C-1

A proposed specification for additions used in processing portland cement was accepted. The new specification will relieve the committee of the responsibility of approving additions and will place this responsibility in the hands of the manufacturer who would be guided by the specification. The action is subject to ratification by letter ballot and approval by the ASTM Administrative Committee on Standards.

New methods of test were approved for determining the amount of water-soluble alkali in masonry cements as well as for evaluating false set and potential sulfate resistance of portland cement. The chemical requirements for portland cement in portland blast-furnace slag cement will contain several changes as recommended to the committee. An increase in the autoclave specimens limited for portland cement is also under consideration. A cooperative series of tests to determine the influence of time of wait during mixing of mortars in the testing of masonry cement has been completed with results obtained from 21 laboratories. This test program is part of a joint study by both Committee C-1 on Cement and C-12 on Masonry Mortars.

A joint subcommittee on cement and concrete reference laboratory was formed with equal representation from both Committees C-1 on Cement and C-9 on Concrete and Concrete Aggregates. Dr A. A. Bates was named chairman of the new joint subcommittee.

Gypsum, C-11

A new method for determining the normal consistency of plaster, known as the conical plunger method, is being investigated by Committee C-11 on Gypsum. This is a modification of the method described in ASTM Standard C 26. The Methods of Testing Gypsum and Gypsum Products (C 26) are being subdivided into three general sections: (1) Chemical analysis of gypsum and gypsum products; (2) Physical testing of gypsum plasters and gypsum concrete; and (3) Physical testing of gypsum board products and gypsum partition tile or block.

A proposed specification for joint tape and adhesive for use in treating joints of gypsum wallboard construction is now being submitted to the subcommittee for letter ballot. Upon approval by the subcommittee it is planned to make copies available to all who may be interested in reviewing or commenting upon this proposed specification.

Asbestos-Cement Products, C-17

Six new subcommittees met for the first time and set up programs for future development of standards. In addition to subcommittees on nomenclature, research, and ISO work, there will now be subcommittees on roofing and siding, flat and corrugated board, and pipe. A primary project for the Subcommittee on Pipe will be to review the two specifications for Asbestos-Cement Pressure Pipe (C 296T), and Asbestos-Cement Sewer Pipe (C 428T). Work is continuing on the alkalinity test.

Structural Sandwich Construction, C-19

The use of sandwich construction in jet-powered aircraft and missiles has resulted in the need for a new set

of standards for evaluating the properties which become critical under the extreme conditions encountered.

A flexure creep test method is in process of letter ballot acceptance. A recommended practice for testing at high or low temperatures will again become a project.

There is increased emphasis on the development of standards needed in the building construction field. Topics discussed included nondestructive testing, accelerated aging tests on building panels, and test methods for determining shear properties, modulus of elasticity in bending, and modulus of rigidity in bending of corrugated-faced building panels with foamed cores.

Paints, Varnish, Lacquer, and Related Products, D-1

Specifications of some states and other agencies for the purchase of traffic paint are under study through a working group on accelerated testing. Preliminary studies have indicated that further useful information might be gained by requesting all remaining state highway departments to furnish their purchase specifications and test procedures, and to comment on the value of the tests.

A working group is initiating an interlaboratory test program to evaluate a proposed method for determining the rheological properties of thixotropic or gel-type paints.

Plans also were made for additional interlaboratory test programs for measuring initial and ultimate set for glazing and caulking compounds. Further studies will cover accelerated weathering.

Petroleum Products and Lubricants, D-2

Organization of a new coordinating division on nuclear problems was announced. Chairman of the new division is Leo P. Manley, Socony Mobil Oil Co, Inc, Paulsboro, N. J. The division mapped a program of activity and assigned areas of responsibility for liaison and technical surveillance as one of its early activities. An open forum is planned for the ASTM Annual Meeting in June 1961.

Committee D-2 will look into possible revisions to ASTM Specifications for Burner Fuel Oils (D 396), unchanged since 1948. Changes under consideration would provide a sharper delineation between No. 1 and No. 2 fuel oils to narrow the range for acceptable fuels for No. 2 grade. Many feel that these changes would result in less adjustments to existing fuel oil burners.

Protein-rich food stuff for people might result from work of a new task group on light hydrocarbons, formed to consider the development of methods of test and specifications for hydrocarbon solvents to extract the oils from seed cakes and other food products.

Road and Paving Materials, D-4

A method of test for determining the rate of curing of cutback asphalts by the rolling ball viscometer method is being developed. This is the first known attempt to measure the rate of cure in terms of change in viscosity. The proposed method will probably not be ready for Society action for a year.

Continuing to place emphasis on precision in methods of test, Committee D-4 has established a joint activity with Committee D-8 on Bituminous Materials for Roofing, Waterproofing, and Related Building or Industrial Uses for a uniform style for precision statements.

Coal and Coke, D-5

Substantial progress was made toward standard methods for preparing coal samples using mechanical sampling devices. A procedure for determination of moisture in the method of sample preparation was completed.

At the request of industry, work on standard methods of physical testing of briquettes was inaugurated. A draft of specifications for the movable-wall oven for measurement of carbonization pressures of coal was presented for consideration.

Of particular interest to the coal industry is participation of Committee D-5 in work of the International Organization for Standardization in order to prepare methods of testing coal acceptable for international use. Delegates from the committee presented USA opinions on standards at meetings of the Working Group on Testing of Coke, in Paris and in Rome, January and November 1959. The committee will be represented at the meetings on sampling of coal and testing of coke in Madrid in the fall of 1961.

Bituminous Materials for Roofing, Waterproofing, and Related Building or Industrial Uses, D-8

Specifications for bituminous fiber pipe have been completed by a subcommittee. These will now be sent to the committee for letter ballot and then to the Society's Administrative Committee on Standards for approval. They cover homogeneous bituminized fiber drain and sewer pipe, and bituminized fiber, laminated-wall drain and sewer pipe.

The committee has under way a study of rheological properties to serve as a basis for defining and measuring the temperature susceptibility of asphalt bitumens.

Electrical Insulating Materials, D-9

The new subcommittee on composite electrical insulation, organized in 1959, is working on projects to develop tests for slot cell insulation in classes A, B, and AB.

Several revisions are being made in the Specifications for Electrical Insulating Paper (D 202). These methods are almost constantly under revision because they collect under one designation a large number of test methods for electrical insulating paper. The present activity is on wet-dry density of paper and on quality control and sampling.

Methods of testing various insulating fabrics and tapes are receiving attention; a tearing strength method is to be added to Method D 295. Also, the test for thermal stability of fabrics by the curved electrode method (dielectric breakdown) will be recommended to the Society for publication as tentative. This method now appears as appendix to the ASTM Standards on Electrical Insulating Materials, published in 1959.

Because of their heat resistance, ceramic materials are often used for insulation at high temperatures. A method for measuring the resistance of ceramics at high temperatures has been completed by the subcommittee and recommended to the committee for approval as tentative.

Rubber and Rubber-Like Materials, D-11

New specifications for silicon rubber insulation for wire and cable are being completed. Study is being undertaken of the problem of measuring insulation resistance of the newer polyethylene insulating compounds used on wire and cable. A review is being undertaken of all ASTM specifications for insulated wire and cable, to standardize and reduce the number of requirements.

New definitions of the terms "rubber," "rubber-like," and "rubber products" will be submitted to the Society for publication in Tentative Definitions of Terms Relating to Rubber and Rubber-Like Materials (D 1566-58T). Committee D-20 on Plastics is also studying these definitions.

Specifications for moisture resistance of rubber tape are in preparation. They will also cover butyl rubber with requirements for moisture as well as heat resistance.

Consideration is being given to a revision of the Method of Test for International Standard Hardness of Vulcanized Natural and Synthetic Rubbers (D 1415-56T) as regards the use of a pellet-type specimen about half the size of that now specified. This revision has been proposed by the international committee, ISO/TC 45. This modification would produce a useful procedure for determining the hardness of thin pieces, Committee D-11 reports.

Revisions were completed of the Methods for Chemical Analysis of Natural Rubber (D 1278-58T) as regards procedures for copper, manganese, iron, ash, and the rubber hydrocarbon procedure. Study is being undertaken of a procedure for determining nitrogen in crude natural rubber for inclusion in Methods D 1278. This will include both a semi-micro and macro Kjeldahl method.

Plans were made to participate in the ISO/TC 45 program to test the physical properties of seven commercially made grades of natural rubber ranging from very slow to very fast cure rates. These tests will be made in about 25 laboratories throughout the world. Samples of the rubbers, compounding ingredients, and instructions for the test program are being made available by the National Bureau of Standards. This program is aimed at determining whether good correlation and satisfactory deviation from a known standard sample can be obtained on stress-strain test. Mooney viscosity determinations on butyl rubber and vulcanization characteristics by means of the Mooney viscometer on compounded natural rubber samples furnished by NBS will be made also. It is hoped that a report on this extensive program can be completed in time for presentation at the ISO/TC 45 meeting in Milan, Italy, in 1961.

A new Table III in the Tentative Recommended Practice for Description of Types of Styrene-Butadiene Rubbers (SBR) (D 1419-58aT) will include requirements for the following oils: Highly aromatic (HI-AR), minimum 20-percent saturates; Aromatic (AR), 22 to 35 percent saturates; Saturated (SA), 35 percent minimum saturates; Highly saturated (HI-SA), 65 percent minimum saturates. This will delete the naphthenic (NAPH) and paraffinic (PAR) from the present Table II in Recommended Practice D 1419 and substitute saturated and highly saturated materials. Test methods for these oils are to be published in an Appendix to D 1419 for information.

The Subcommittee on Life Tests for Rubber Products reported completion of its work on correlation of oven and shelf aging.

The name of the Subcommittee on Cellular Rubbers is being changed to "Flexible Cellular Materials" to cover its activities more adequately.

The SAE-ASTM Technical Committee on Automotive Rubber reported completion of a new specification for latex-dipped goods and coatings and a new specification for automotive air-conditioning hose. Revisions were completed also of Table VI, Class TB, in the Specifications for Elastomer Compounds for Automotive Applications (ASTM D 735-59T; SAE 10R).

Industrial Aromatic Hydrocarbons and Related Materials, D-16

A significant contribution has been made by the committee in creating a broader understanding of the problems in commercial production, testing, and distribution of high-quality and industrial grades of benzene, toluene, and xylenes. It is now possible to consolidate a number of grades, providing real savings to the ultimate consumer.

A proposed standard method of determining relative amounts of xylene isomers, using the infrared technique, has been published. Work is continuing on a standard gas-liquid chromatographic procedure replacing the infrared approach. Additional tables for calculation of volume and weight of mixed xylenes are slated for publication as part of the Tentative Tables D 1555-58T.

Specifications for refined phenol and methods for phenol assay are under development. Methods for styrene monomer and polymer are nearing completion. Tar acid test methods for determination of oil and naphthalene, distillation range, specific gravity, water content, and solidification point of tar acids are being drafted.

Committee D-16 is active in the International Organization for Standardization Technical Committee 78.

Industrial Water, D-19

A new subcommittee on methods of radiochemical analysis has a scope covering methods for the physical and chemical testing of industrial water, industrial waste water, and deposits where radioactivity or radiochemical considerations are controlling. Committee D-19 has had three task groups actively preparing methods relating to radioactivity in water. The new subcommittee will be devoted specifically to such work.

The new subcommittee contains task groups on methods of measurement of radioactivity in water, radiochemical analysis for radiostrontium in water, and contamination of reactor cooling water. In addition, other task groups engaged in radioactivity problems will continue their work under other subcommittees.

New projects initiated or reported on for the first time included the preparation of purchase specifications (and related test methods) for heavy water, work on determination of additional elements (chlorides, nickel, aluminum, and zinc) in high-purity water, and organization of a new subcommittee on methods of radiochemical analysis.

The committee-sponsored research project for vaporous carry-over in boilers was reported to be nearing completion. Results will soon be available for study.

Plastics, D-20

Some vinyl chloride plastic compounds are rigid and tough; others are flexible and rubbery, which presents problems in providing a sufficient number of grades and

types to embrace all the major categories of properties. A new specification, which is in part a classification for poly (vinyl chloride) resins, will enable the designation of properties for more than 300 million possible combinations. This astronomical number of compounds, some of which, no doubt, would be impossible to produce, can be specified through the use of nine different property levels for six different properties for PVC resins. The new specification has been approved by Committee D-20 and will be submitted to the ASTM Administrative Committee on Standards for approval this fall.

Confusion and differences of opinion surrounding the definitions of "elastomer" and "rubber" may be alleviated by an agreement reached by a joint subcommittee on definitions of ASTM Committees D-11 on Rubber and D-20 on Plastics. There have been differences of opinion in both committees concerning these terms. In order to come to some understanding of definitions, a joint committee was organized. The group came to a tentative agreement on definitions for "rubber" and "rubber-like" which will be referred to the respective committees to obtain agreement, if possible.

Committee D-20 has initiated work on high-speed tensile testing, expanding the committee's program into high rates of loading for tensile testing, which supplements similar efforts over many years with high rates of loading for impact and flexure testing.

The committee will also develop, as needed, test methods for evaluating performance properties of end items, such as certain plastics products used in building.

Casein and Similar Protein Materials, D-25

Several methods of test relating to casein and isolated soy protein were submitted to the American Society for Testing Materials for adoption. The methods provide for the determining of ash content, alkali requirements, free acidity, moisture, nitrogen, and oil. A related method on the sampling of casein and similar protein materials was adopted at last year's meeting. Other work under consideration by the committee includes methods for determining dirt content, foaming characteristics, insoluble matter, minimum alkali content, odor, and tests for the materials when used for paper coating. Additional studies still under way apply to methods for measuring the viscosity of casein and soy protein solutions.

Electrical Insulating Liquids and Gases, D-27

This committee was organized in February 1959, from a nucleus of the former Subcommittee IV of Committee D-9 on Electrical Insulation. It now has grown to 105 members, many coming from manufacturers and users of insulating gases, a new area for ASTM activity.

Of the six subcommittees, three are concerned with various materials used as liquid insulating fluids, while the other three deal with methods of testing and confirming the required properties of these fluids.

The Subcommittee on Mineral Oils has completed specifications for low- and high-viscosity cable oils.

The Subcommittee on Synthetics is continuing examination of synthetic fluids and has completed a test method for inorganic chlorides for letter ballot approval.

The Subcommittee on Electrical Tests hopes to complete an adaptation of the German VDE gap method for dielectric strength in the next few months.

The Subcommittee on Chemical Tests has completed a method of test for determining the hydrolyzable chlorine compounds in askarels.

The Subcommittee on Physical Tests failed to agree on a method of determining the coefficient of expansion of petroleum oils and askarels, but authorized four new sections to devise methods of test for dew-point measurements; volatility; molecular weight; and carbon types in insulating oils.

Methods of Testing, E-1

New task groups were organized to study thermal conductivity tests of metals and to develop linear expansion tests for both metals and non-metals.

Definitions of specific gravity in ASTM standards which have been unchanged since 1927 have been scrutinized by the Subcommittee on Density, which proposed a revision. This will expand the Standard Definitions of Terms Relating to Specific Gravity (E 12-27) to include density and specific gravity of solids, liquids, and gases. The present terminology in various ASTM standards in some instances is inconsistent and the committee intends to clear up the confusion.

A modification to Paragraph 17 of Tentative Methods of Verification of Testing Machines (E 4-57T) was proposed to increase the recommended interval between verifications from 6 to 12 months for testing machines that are in constant use. Work is under way also on development of procedures for calibration of testing machines under 2000-lb capacity.

Appearance, E-12

Businessmen and their secretaries will benefit from the work of a newly organized subcommittee on standards for typewriter ribbons and carbon paper, organized by Committee E-12. The new committee has the following scope: (1) To compare methods now being used to evaluate the appearance qualities of the printed copy made by typewriter ribbon and carbon paper, (2) to determine whether improvements and new features are required, and (3) to prepare standard test methods for evaluating the color, density, sharpness, and other properties affecting the appearance of the printed copy.

The organization meeting was devoted to naming and defining the appearance properties of carbon paper and typewriter ribbons with which the industry and the trade are concerned. For identification these were divided into two classes: (1) properties of the impression, and (2) properties of the carbon paper or typewriter ribbon itself. Arrangements were made to conduct a series of interlaboratory tests to determine more specifically how different laboratories in the industry measure intensity and to what extent the present test methods agree.

Analysis and Testing of Industrial Chemicals, E-15

Committee E-15 has considered establishing a subcommittee on gas chromatography standards, but at its meeting held with members of Committee D-2 on Petroleum Products and others interested in gas chromatography, it was decided that the problems are so broad and the in-

terest so great that the establishment of a separate committee is justified. A recommendation to this effect will be presented to the ASTM Board of Directors.

Committee E-15, on the basis of returns from a questionnaire, voted to participate actively in international standardization work being done by ISO/TC 42, Chemistry. The group will not participate in any specifications work, however, as this is excluded from the E-15 scope. Steps will be taken to organize a U.S. national committee for ISO/TC 47 following the approval of the recommendation by ASTM and ASA.

The general methods subcommittees are working actively on methods for chlorine and sulfur in organic compounds, for hydroxyl content and unsaturation, and coordination of new methods for determination of water.

The work on development of density-temperature tables for liquid industrial chemicals is going forward. Plans are to use a format similar to that for density-temperature tables for aromatics (D 1555).

Progress is being made toward development of recommended procedures for interlaboratory tests and for expressing precision and accuracy. The committee agreed to accept the concept of accuracy proposed by Committee E-11 on Quality Control—that accuracy include both the concepts of precision and bias.

Skid Resistance, E-17

Study of the fundamentals of skid resistance was inaugurated by this new committee at its first meeting. Representatives were present from many highway departments, the Bureau of Public Roads; tire and rubber companies; the road materials industry; universities; the Federal Aviation Agency; and others.

Although primary attention will be given to highway and runway surfaces, it is intended to include all types of traffic surfaces. The scope of the new committee is: (*a*) To develop and standardize field and laboratory methods of test for determining traffic surface slipperiness; (*b*) To develop and standardize methods of test for the use of a set of standards of traffic surface slipperiness; (*c*) To stimulate research to accomplish the foregoing purposes.

Subcommittees will cover the following: Stopping-distance test method; trailer method; other methods; laboratory methods; laboratory-field coordination; standards of surface slipperiness; tire characteristics and significance; and side friction measurements.

The next ASTM Committee Week will be at the Netherland-Hilton Hotel, Cincinnati, Ohio, January 30 to February 3, 1961. The 64th Annual Meeting will be held at Chalfonte-Haddon Hall, Atlantic City, N.J., June 25 to 30, 1961.

News Briefs . . .

• STANDARDIZED TESTING procedures are to be developed by a new association, the Acoustical Door Institute, organized early this year. The Institute plans to set up a laboratory where sound-insulating doors can be tested in accordance with official Institute standards.

The purpose of the Institute's program is to relieve the confusion that now exists in comparing the various acoustic doors, the Institute explains, citing the "multiplicity of laboratory facilities, practices, and test procedures."

• FOR SOME YEARS American participation in the work of Technical Committee 17 on Steel of the ISO (International Organization for Standardization) has been on an observer status. After a series of discussions in 1960 between the American Standards Association (which officially represents the USA in the ISO), the American Iron and Steel Institute, and the American Society for Testing Materials, an American supervisory group has been appointed to participate actively in the work of ISO/TC 17.

The nine-man group consists of representatives of four steel producers and four steel consumers with a member of the ASTM staff acting as secretary. C. L. Kent, Jones and Laughlin Steel Corp, has been appointed chairman. American steel producers have established a fund so that the first year or two of work will not be hampered financially.

The American supervisory group plans to consult with the various subcommittees of ASTM Committee A-1 on Steel on any actions pertinent to their scope of interest. These subcommittees, dealing with standardization work in various areas of steel products, are composed of representatives of steel producers and users and are balanced in these two categories. Similar consultation with ASTM Committee A-10 on Iron-Chromium, Iron-Chromium Nickel and Related Alloys may come into the picture later if the international standardization work enters into discussions of stainless steels. These two ASTM committees have promulgated over 200 specifica-

At the organization meeting of the American supervisory group for ISO Technical Committee 17, Steel; (Seated l to r) J.K. Killmer, Bethlehem Steel Co; M.S. Northrup, Esso Research and Engineering Co; J.W. Caum, ASTM staff, secretary; Charles L. Kent, Jones and Laughlin Steel Corp, chairman; F.H. Dill (for A.S. Marvin), American Bridge Division, U.S. Steel Corp. (Standing l to r) P.R. Wray, U.S. Steel Corp; W. Rodgers, Republic Steel Corp; R.E. Hess, acting secretary, ASTM. Abroad at the time of the picture: A.S. Marvin, American Bridge Division, U.S. Steel Corp; N.L. Mochel, Westinghouse Electric Corp; and C.W. Wheatley, A.O. Smith Corp.

tions for steel products used widely by American industry.

The first meeting of the supervisory group was held on June 27, 1960. At that time it was decided to gather information on the seven working groups of ISO/TC 17. After such information has been received, another meeting will be called to decide if the USA should request membership on any of the existing working groups. The present working groups cover (1) test procedures, (2) classification and designation, (3) structural steel, (4) heat-treated and alloyed steels, (5) sampling and general technical conditions of delivery, (6) methods of chemical analysis, and (7) methods of test other than mechanical and chemical analysis.

Dr Dorothy Siegert Lyle

• DR DOROTHY SIEGERT LYLE, alternate member on Sectional Committee L22, Rayon Finished Fabrics, and on the ASA Consumer Goods Standards Board, was elected president of the American Home Economics Association at the association's annual meeting June 28-July 1. Dr Lyle is the director of consumer relations at the National Institute of Drycleaning, Silver Springs, Maryland. She represents the Institute on Committee L22 and on the CGSB.

• STANDARDS and standardization will be the subject of one of a series of ten technical seminars being held by the American Society of Tool and Manufacturing Engineers in 1960-61. The seminar on standards is scheduled for November 8-9, 1960, at the Warwick Hotel, Philadelphia.

Additional information can be obtained from ASTME headquarters, 10700 Puritan Avenue, Detroit 38, Michigan.

William A. Wildhack

• WILLIAM A. WILDHACK, special assistant to the Director of the National Bureau of Standards, has been assigned general administrative responsibility for the activities of the Bureau that concern cooperation with other Federal agencies and with national and international standardizing organizations in establishing codes, specifications, and other standard practices. This includes cooperation with such organizations as the American Standards Association and the American Society for Testing Materials.

Mr Wildhack will represent the Bureau at meetings of the Federal Supply Board, the Interdepartmental Committee on Physical Security Equipment, the Commodity Standards Editorial Committee, and other formal and informal committees concerned with standard practices. He will also supervise coordination of technical standards within the Bureau and will serve as chairman of the Committee on Testing.

Dr A. T. McPherson, who has been responsible for these activities, will devote his major effort to a survey on the metric system.

One of Mr Wildhack's responsibilities will be to serve as chairman of the Advisory Committee on Engineering and Related Standards. This committee aids the Bureau in cooperating with other organizations to establish standard practices. In addition to Mr Wildhack, the committee is made up of three representatives from the American Standards Association and three from the American Society for Testing Materials. This committee advises the National Bureau of Standards concerning national needs for standard codes, specifications, test methods, and data on properties of engineering materials. It also helps to keep the Bureau aware of efforts of private organizations in these areas; and it fosters cooperative programs and recommends ways in which the Bureau's special competence in development and application of engineering and related standards can best be of use.

C. N. Coates, assistant to the Director of the Bureau, is secretary of the committee.

Mr Wildhack has been with the Bureau since 1935, working first as a physicist in the Aeronautical Instruments Section. As chief of the Missile Instrumentation Section (1948-1950), he instituted the continuing project on transducer performance and test methods.

Since 1950, Mr Wildhack has been chief of the Office of Basic Instrumentation, and has participated in many NBS developments in instrumentation and techniques of measurement and calibration. He initiated the instrumentation reference center which now has a collection of 25,000 references, each coded under numerous headings for easy retrieval by the "Peek-a-Boo" retrieval system which he pioneered in this country.

In 1958 and 1959, Mr Wildhack served for some months with Dr R.D. Huntoon on the staff of the Appropriations Committee of the House of Representatives, making a study of reliability in the missile field and an evaluation of the Vanguard Program.

Mr Wildhack was president of the Instrument Society of America in 1954, and at present is chairman of its Committee on Instrumentation Research. He is also chairman of the Committee on Council Activities and Organization of the American Association for the Advancement of Science, and is an honorary member of the Inter-Range Instrumentation Group.

• NINE working groups of Technical Committee 61 on Plastics of the International Organization for Standardization will meet in Prague, Czechoslovakia, from October 17-22. Their work will deal with the following: nomenclature and definitions; mechanical strength properties; standard laboratory atmosphere and conditioning procedures; thermal properties; physical-chemical properties; aging, chemical, and environmental resistance; preparation of test specimens; electrical properties; specifications. Twelve American delegates from industry, government, and education are

expected to attend the meeting. The American Standards Association, USA member of ISO, holds the secretariat of TC 61, in which 21 member countries of ISO are participating.

• SIGNIFICANT PROGRESS was achieved toward coordinating textile testing methods at the fourth meeting of Technical Committee 38, Textiles, of the International Organization for Standardization (ISO).

Meeting in London from May 19-27, more than 100 delegates from 20 countries, including the 17-man American delegation, laid the groundwork for important advances on tests for such properties as cloth strength, breaking load of yarns (skein test), unevenness of textile strands, trash and lint content in raw cotton, and the fineness of cotton fiber (by airflow methods). At the same time, methods of sampling for cotton fibers were also tentatively approved. Substantial agreement was reached on questions of terminology and designations.

Among projects initiated for consideration by the participating members of the committee were measurement of crease-resistance; cloth descriptions; and simplification of the names used for man-made and synthetic fibers.

The main committee received reports showing considerable progress in establishing the international system of indicating the size of textile fibers and yarns (tex) and approved future measures for its universal adoption.

• THE Industrial Hygiene Foundation of America, Inc, has just issued a brochure describing its activities. A nonprofit research association, it represents a unified, voluntary effort on the part of the industries concerned to advance industrial hygiene and occupational health, and improve working conditions.

The Foundation has a fellowship in the Mellon Institute and has its headquarters there. Its organization came about when a group of industries, recognizing that the danger of silicosis was rapidly becoming more serious, decided to set up a scientific research program to work on a solution of the dust disease problem.

Dr H.H. Schrenk, managing director, is chairman of ASA Sectional Committee Z37, toxic dusts and gases. He is also active on Committee Z2, protection of heads, eyes, and respiratory organs, and Z16, methods of recording and compiling accident statistics.

In the early years (it was organized in 1935) the Foundation conducted and stimulated investigations and gathered and disseminated factual information. In 1948, a toxicological laboratory was set up, and in 1959 these facilities were enlarged, making it possible to increase the Foundation's research activities in the toxicological and biological fields.

The Foundation's staff consists of professionally qualified scientists with experience in industrial hygiene and occupational health, toxicology, histopathology, biochemistry, engineering, environmental analyses, plant surveys, and air pollution. Four professional committees supplement the activities of the staff. They are medical, legal, engineering, and chemical-toxicological.

Additional information can be obtained by writing Industrial Hygiene Foundation of America, Inc, Mellon Institute, 4400 Fifth Avenue, Pittsburgh 13, Pa.

AMERICAN STANDARDS

Just Published . . .

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CHEMICAL

Common Name for the Pest Control Chemical 4-chloro-2-butynyl *m*-chlorocarbanilate: barban, K62.23-1960 $0.35

Sponsor: U.S. Department of Agriculture

ELECTRIC AND ELECTRONIC

Supplement C57.12.00a-1960 to Section 00, General, of American Standard Requirements, Terminology and Test Code for Distribution, Power, and Regulating Transformers and Reactors Other Than Current-Limiting Reactors, C57.12.00-1958 $0.40

Dimensions of thermometer wells for the purpose of ensuring interchangeability of thermometers in transformers.

Sponsor: Electrical Standards Board

GAS-BURNING APPLIANCES

Addenda Z21.10.1a-1960 to American Standard Approval Requirements for Gas Water Heaters, Volume I, Z21.-10.1-1959 $0.50

Addenda Z21.13.2b-1960 to American Standard Approval Requirements for Central Heating Gas Appliances, Vol-

ume II, Gravity and Forced Air Central Furnaces, Z21.13.2-1958 and Addenda Z21.13.2a-1959 $0.50

Addenda Z21.22a-1960 to American Standard Listing Requirements for Relief Valves and Automatic Gas Shut-Off Devices for Hot Water Supply Systems, Z21.22-1958 $0.75

Sponsor: American Gas Association

MATERIALS HANDLING

57-Gallon Full-Removable-Head Universal Drum (UFC and CFC - Rule 40, NMFC - Rule 5), MH2.11-1960

30-Gallon Full-Removable-Head Universal Drum (UFC and DFC - Rule 40, NMFC - Rule 5), MH2.12-1960

30-Gallon Full-Removable-Head Universal Drum (ICC-17H), MH2.13-1960

16-Gallon Full-Removable-Head Universal Drum (UFC and CFC - Rule 40, NMFC - Rule 5), MH2.14-1960

In one volume—$0.50

Sponsor: Steel Shipping Container Institute

MECHANICAL

Instrument Precision Ball Bearings, Requirements for, B3.10-1960 (Revision of B3.10-1959)

Establishes the characteristics which define an instrument precision ball bearing, boundary dimensions and tolerances, classifications used for selective assembly, internal clearances, and other requirements as they may be developed.

Sponsor: Anti-Friction Bearing Manufacturers Association

Spindle Noses and Arbors for Milling Machines, B5.18-1960 (Revision of B5.18-1953) $1.00

Essential dimensions of spindle noses, ends of arbors, adapters, and drawn-in bolt ends for milling machines.

Sponsors: American Society of Tool and Manufacturing Engineers; Metal Cutting Tool Institute; Society of Automotive Engineers; National Machine Tool Builders' Association; American Society of Mechanical Engineers

MEDICAL

Anesthetic Equipment: Endotracheal Tubes, Z79.1-1960 $0.50

Specifies dimensions and tolerances of endotracheal tubes and cuffs. Also included are sections on terminology and materials to be used.

Sponsor: American Society of Anesthesiologists

PHOTOGRAPHY

Sheet Film and Plate Processing Tanks, Specifications for, PH4.2-1960 (Revision of PH4.3-1952) $0.35

Defines the inside dimensions of tanks for processing sheet films or plates up to 8 x 10 inches in size which are held in hangers.

Photographic Trays, Specifications for, PH4.3-1960 (Revision of PH4.3-1952) $0.35

Covers requirements of trays for processing photographic sheet films, plates, and papers in sizes up to 20 x 24 inches.

Channel-Type Photographic Processing Hangers for Sheet Films and Plates, Specifications for, PH4.4-1960 (Revision of PH4.4-1952) $0.35

Defines channel-type frame hangers for use in processing of single-sheet films and plates.

Sponsor: Photographic Standards Board

PIPE AND FITTINGS

Pipe Threads (Except Dryseal), B2.1-1960 (Revision of B2.1-1945) $3.00

Specifications, dimensions, and gaging of tapered and straight pipe threads. Appendixes cover definitions and letter symbols, threads for pipe used with threaded steel flanges, taper and straight threads for electrical conduit, threads for bungs used in steel drums, and twist drill diameters for holes for pipe threads.

Sponsors: American Society of Mechanical Engineers; American Gas Association

Cast-Iron Pipe Flanges and Flanged Fittings, Class 125, B16.1-1960 [Revision of B16.1-1948 (R1953)] $1.50

Covers pressure ratings; sizes and method of designating openings of reducing fittings; marking; minimum requirements for materials; dimensions and tolerances; bolt, nut, and gasket dimensions; tests.

Cast-Iron Pipe Flanges and Flanged Fittings, Class 250, B16.2-1960 [Revision of B16b-1944 (R1953)] $1.50

Specifications for cast-iron pipe flanges and flanged fittings intended for a nominal pressure service of 250 psi. Covers pressure ratings, marking, minimum material requirements, dimensions and tolerances, and testing for nominal pipe sizes ranging from 1 to 30 inches. Bolt, nut, and gasket data are given for sizes up to 48 inches.

Sponsors: Mechanical Contractors Association of America; Manufacturers Standardization Society of the Valve and Fittings Industry; American Society of Mechanical Engineers

In Process . . .

As of August 18, 1960

Standards Council gives final approval to American Standards. Board of Review acts for Standards Council (takes about 2 weeks). Standards Board approves standards to send to Board of Review or Standards Council (takes about 4 weeks).

ACOUSTICS, VIBRATION, AND MECHANICAL SHOCK

In Standards Board

Electroacoustical Characteristics of Hearing Aids, Methods for Measurement, S3.3- (Revision of Z24.14-1953)

Sponsor: Acoustical Society of America

BUILDING AND CONSTRUCTION

American Standard Approved

Polysulfide Base Sealing Compounds for the Building Trade, Specification for, A116.1-1960

CINEMATOGRAPHY

In Board of Review

Transmission Density of Motion-Picture Films, Method of Determining, PH22.-27- (Revision of PH22.27-1947)

Reel Spindles for 16mm Motion-Picture Projectors, PH22.50- (Revision of PH22.50-1946)

9-kc Sound Focusing Test Film for 35mm Motion-Picture Sound Reproducers, PH22.62- (Revision of PH22.-62-1948)

1000-Cycle Balancing Test Film for 35mm Motion-Picture Sound Reproducers, PH22.67- (Revision of PH22.-67-1948)

Sponsor: Society of Motion Picture and Television Engineers

In Standards Board

Cross-Modulation Tests for 16mm Variable-Area Photographic Sound Prints, PH22.52- (Revision of PH22.52-1954)

Sound Records and Scanning Area of Double Width Push-Pull Sound Prints, Normal Centerline Type, PH22.69- (Revision of PH22.69-1948)

Sound Records and Scanning Area of Double Width Push-Pull Sound Prints, Offset Centerline Type, PH22.70- (Revision of PH22.70-1948)

Spectral Diffuse Density of Photographic Sound Record on Three-Component Subtractive Color Films, PH22.117-

Dimensions for 65mm Motion-Picture Film, KS-1870, PH22.118-

Dimensions for 70mm Motion-Picture Film, Perforated 65mm, KS-1870, PH22.119-

Sponsor: Society of Motion Picture and Television Engineers

ELECTRIC AND ELECTRONIC

American Standard Approved

Aluminum Conduit, Specification for, C80.5-1960

Sponsors: American Iron and Steel Institute; National Electrical Manufacturers Association

In Standards Board

Specialty Transformers, Requirements and Terminology for, C89.1- (Revision of C89.1-1957)

Sponsor: National Electrical Manufacturers Association

GAS-BURNING APPLIANCES

American Standards Approved

Addenda Z21.1.1a-1960 to American Standard Approval Requirements for Domestic Gas Ranges, Volume I, Free Standing Units, Z21.1.1-1959

Addenda Z21.1.2a-1960 to American Standard Approval Requirements for Domestic Gas Ranges, Volume II, Built-In Domestic Cooking Units, Z21.1.2-1959

Approval Requirements for Hotel and Restaurant Gas Ranges and Unit Broilers, Z21.3-1960 (Revision of Z21.3-1956, Z21.3a-1957, Z21.3b-1959)

Addenda Z21.5a-1960 to American Standard Approval Requirements for Domestic Gas Clothes Dryers, Z21.5-1959

Approval Requirements for Domestic Gas-Fired Incinerators, Z21.6-1960 (Revision of Z21.6-1957, Z21.6a-1958, Z21.6b-1959)

Approval Requirements for Gas Water Heaters, Z21.10.1-1960 (Revision of Z21.10.1-1959, Volume I)

Addenda Z21.10.2a-1960 to American Standard Approval Requirements for Gas Water Heaters, Volume II, Side-Arm Type Water Heaters, Z21.10.2-1959

Approval Requirements for Gas Water Heaters, Volume III, Circulating Tank, Instantaneous and Large Automatic Storage Type Water Heaters, Z21.10.3-1960

Addenda Z21.11a-1960 to American Standard Approval Requirements for Gas-Fired Room Heaters, Z21.11-1959

Addenda Z21.13.1b-1960 to American Standard Approval Requirements for Central Heating Gas Appliances, Volume I, Steam and Hot Water Boilers, Z21.13.1-1958, Z21.13.1a-1959

Addenda Z21.13.4b-1960 to American Standard Approval Requirements for Central Heating Gas Appliances, Volume IV, Gravity and Fan Type Vented Recessed Heaters, Z21.13.4-1958, Z21.13.4a-1959

Addenda Z21.15b-1960 to American Standard Listing Requirements for Manually Operated Gas Valves, Z21.-15-1958, Z21.15a-1959

Approval Requirements for Gas Unit Heaters, Z21.16-1960 (Revision of Z21.16-1957, Z21.16a-1958, Z21.16b-1959)

Addenda Z21.17b-1960 to American Standard Listing Requirements for Domestic Gas Conversion Burners, Z21.17-1958, Z21.17a-1959

Approval Requirements for Refrigerators Using Gas Fuel, Z21.19-1960 (Revision of Z21.19-1941)

Listing Requirements for Metal Connectors for Gas Appliances, Z21.24-1960 (Revision of Z21.24-1955, Z21.-24a-1956, Z21.24b-1959)

Addenda Z21.27a-1960 to American Standard Approval Requirements for Hotel and Restaurant Gas Deep Fat Fryers, Z21.27-1959

Approval Requirements for Portable Gas Baking and Roasting Ovens, Z21.-28-1960 (Revision of Z21.28-1956, Z21.28a-1957, Z21.28b-1959)

Approval Requirements for Gas Counter Appliances, Z21.31-1960 (Revision of Z21.31-1956, Z21.31a-1957, Z21.31b-1959)

Addenda Z21.34b-1960 to American Standard Approval Requirements for Gas-Fired Duct Furnaces, Z21.34-1958, Z21.34a-1959

Addenda Z21.40a-1960 to American Standard Approval Requirements for Gas-Fired Absorption Summer Air Conditioning Appliances, Z21.40-1959

Sponsor: American Gas Association

In Board of Review

Approval Requirements for Central Heating Gas Appliances, Volume II, Gravity and Forced Air Central Furnaces, Z21.13.2- (Revision of Z21.13.2-1958, Z21.13.2a-1959, Z21.13.2b-Proposed)

Sponsor: American Gas Association

MECHANICAL

In Board of Review

Ball and Roller Bearings and Their Parts, Terminology and Definition, B3.7-

Bearing Mounting Accessories, Specifications for, B3.9- (Revision of B3.9-1951)

Sponsor: Anti-Friction Bearing Manufacturers Association

MINING

In Standards Board

Rock Dusting Underground Bituminous Coal and Lignite Mines to Prevent Coal Dust Explosions, M13.1- (Revision of M13-1925)

Sponsor: Bureau of Mines

NUCLEAR ENERGY

In Standards Board

Radiation Protection in Uranium Mines and Mills (Concentrators), N7.1-

Sponsors: Atomic Industrial Forum; National Safety Council

PIPE AND FITTINGS

American Standard Approved

Dryseal Pipe Threads, B2.2-1960 (Partial revision of B2.1-1945, Pipe Threads)

Sponsors: American Society of Mechanical Engineers; American Gas Association

In Board of Review

Addendum B31.1a to American Standard Code for Pressure Piping, B31.1-1955

Addendum B31.3a to American Standard Petroleum Refinery Piping, B31.3-1959

Addendum B31.4a to American Standard Oil Transportation Piping, B31.4-1959

Addendum B31.8a to American Standard Gas Transmission and Distribution Systems, B31.8-1958

Sponsor: American Society of Mechanical Engineers

REFRIGERATION

In Standards Board

Number Designation of Refrigerants, B79.1-

Sponsor: American Society of Refrigerating Engineers

SAFETY

American Standard Approved

Practice for the Inspection of Elevators (Inspectors' Manual), A17.2-1960 (Revision of A17.2-1945)

Sponsors: American Society of Mechanical Engineers; American Institute of Architects; National Bureau of Standards

In Board of Review

Safety Code for Elevators, Dumbwaiters, and Escalators, A17.1- (Revision of A17.1-1955 and A17.1a-1957)

Sponsors: American Institute of Architects; American Society of Mechanical Engineers; National Bureau of Standards

NEWS ABOUT AMERICAN STANDARDS PROJECTS

Industrial Cooling Towers, B76—

Sponsors: American Society of Mechanical Engineers; Air-Conditioning and Refrigeration Institute; Cooling Tower Institute

James L. Willa, manager of the Cooling Tower Institute, who was elected vice-chairman and secretary of the B76 committee early this year, reports that a Sponsors Committee has been organized to supervise the work of the committee. At a meeting in March the Sponsors Committee made plans to streamline and reactivate the B76 program. Stanley F. Des Marais, Engineering Service Division, E.I. du Pont de Nemours & Company, is chairman of Sectional Committee B76.

Five subcommittees are working on standards for (1) Performance; (2) Materials for construction; (3) Mechanical components; (4) Safety requirements; (5) Performance analysis.

James L. Willa

Mr Willa joined the Cooling Tower Institute staff in 1953, following graduation from The Rice Institute with a B.S. degree in chemical engineering. In 1958 he assumed responsibility as coordinator for all technical subcommittee activity in the Institute. He became manager of the Institute in July 1959.

Transformers, Regulators, and Reactors, C57—

Sponsor: Electrical Standards Board

An addition is to be made to the section on thermometers in three of the C57.12 standards on distribution, power, and regulating transformers, and reactors other than current-limiting reactors.

The addition is to be made as follows:

In 12-17.632 of American Standard C57.12.10-1958

In 12-27.630 of American Standard C57.12.20-1959

In 12-37.632 of American Standard C57.12.30-1958

The following sentence is to be added:

"For dimensions of the well, see 12-07.630, Thermometer Wells."

The section referred to here is found in a new supplement, C57.12.00a-1960, to American Standard C57.12.00-1958, the General section of the American Standard C57.12 series.

Data Processing Machines, X3—

Sponsor: Office Equipment Manufacturers Institute

At its first meeting, held August 4, this new committee approved organization of six subcommittees.

Dr Joseph W. Barker, consultant and acting director, Data Processing Group, Office Equipment Manufacturers Institute, is temporary chairman.

The six subcommittees, their chairmen, and tentative scopes, to be more fully developed as the subcommittees proceed with their work, are as follows:

X3-1. Character Recognition. *Scope*—Input and output media to data processing systems for interchange of information between data processing systems and associated equipment utilizing humanly legible printed character sets, e.g., character recognition. *Chairman*—B. Pollard, Burroughs Corporation, Detroit.

X3-2. Coded Character Sets. Standard Data Format. *Scope*—Input and output media to data processing systems for interchange of information between data processing and associated equipment. Standard format for defining data fields, data records, program instructions, and the like. *Chairman*—I. C. Liggett, IBM Corporation, New York.

X3-3. Data Transmission. *Scope*—Data transmission, including coordination with the communications industry and an analysis of significant related standards between data processing and data transmission. *Chairman*—A. C. Reynolds, Jr, Stromberg Division, General Time Corporation, Thomaston, Conn.

X3-4. Common Problem-Oriented Programming Language. *Scope*—Common problem-oriented programming language governing the operation of data processing equipment with the objective of establishing a common language for data processing in which to describe processes to be carried out. This will involve close coordination with user groups and other agencies active in this field. *Chairman*—Dr J. C. Chu, Sperry Rand Corporation, Philadelphia.

X3-5. Definition of Data Processing Operations. Terminology and Glossary. *Scope*—Definition of data processing operations at the machine level to insure identical results from different equipment when executing a given program. Terminology and glossary including information-gathering and screening of existing material and the editing of subcommittee reports prior to submission to ASA. *Chairman*—E. A. Emerson, National Cash Register, Hawthorne, Calif.

X3-6. Procedures for Defining Data-Processing Applications Studies. *Scope*—Procedures for defining data-processing application studies including preparation of standardized survey techniques and standardized flow charting symbols and procedures. *Chairman*—J. T. Davidson, The Standard Register Company, Dayton, Ohio.

Sectional Committee X3 is also serving as the U.S. group in the work of the ISO Technical Committee 97, Data Processing Machines. The American Standards Association, U.S. member of ISO, holds the secretariat.

Safety Glazing Materials, Z26—

Sponsor: Insurance Institute for Highway Safety

A study of all glazing materials and of methods of test specified in the present American Standard is to be

made as a basis for a revision by a new technical committee to be appointed by the chairman. The standard referred to is American Standard Safety Code for Safety Glazing Materials for Glazing Motor Vehicles Operating on Land Highways, Z26.1-1950.

The decision to make the study was taken at a meeting of the committee June 28, 1960. The new Z26 chairman, Arthur S. Johnson, American Mutual Liability Insurance Company, Wakefield, Mass., presided. Mr Johnson is past chairman of ASA's Standards Council. Richard O. Bennett, secretary-treasurer, Insurance Institute for Highway Safety, is the new Z26 committee secretary.

The technical committee was given the following assignment:

1. Examine and evaluate objectively all presently available glazing materials.

2. Consider objections raised in negative votes on reaffirmation of the Z26.1-1950 code.

3. Evaluate methods of testing glazing materials now specified in the Z26.1-1950 code and any new methods of tests.

4. Recognize that this assignment is not an exclusive limitation; that the technical committee may explore outside the specifics mentioned in this motion.

The committee was also authorized "to examine the practicability of a single set of performance standards for glazing materials for each specific location in a motor vehicle."

To emphasize that there has been no change in the status of the American Standard, which is in use in all the 50 states of the Union, the committee adopted the following motion:

"The Z26 sectional committee recognizes that the present American Standard Z26.1-1950 is in full force and effect and that the present activity of the Z26 sectional committee should not cast any doubt on the validity of the standard as now written; that the present activities of the Z26 sectional committee are not directed against any one kind of glazing material; and this motion be publicized by the American Standards Association, Inc, and particularly called to the attention of motor vehicle administrators and other governmental bodies having regulatory power or influence in this field."

Safety glass came into use for automobile windshields about 1930, as an attempt to reduce the severity of the injuries caused by the shattering of ordinary glass or plate glass. In response to public demand, state legislatures then began to pass laws requiring the use of safety glass conforming to specifications developed by the officer or department responsible for the administration of the laws.

In May 1932, the American Standards Association received a request from the National Bureau of Casualty and Surety Companies (now the Association of Casualty and Surety Companies) for a project to develop methods of test and performance specifications for safety glass. The request noted major differences between the test schedules of the different agencies testing glass at that time. The project was initiated in November 1932, and a standard approved in 1935. This standard was revised in 1938 and again in 1950.

In recognition of the important work done by the former sponsors of the committee and by the first chairman, the committee voted a resolution expressing its appreciation "(1) to the Association of Casualty and Surety Companies for the pioneering work and administrative leadership which it provided this committee as a sponsor of this project from 1933 to 1960; (2) to the National Bureau of Standards for its administrative leadership as a sponsor of this project from 1933 to 1958; and (3) to Mr Alfred W. Devine, who served as the first chairman of this sectional committee from 1935 to 1946."

At the June 28 meeting of Sectional Committee Z26, Safety Glazing Materials. Arthur S. Johnson, new Z26 chairman, stands with arms folded at far end of table.

Library Supplies and Equipment, Z85—

Sponsor: American Library Association

Frazer G. Poole, director of the Library Technology Project of the American Library Association, is chairman of this recently organized committee. Mr Poole, a graduate of Catawba College, Salisbury, N.C., with an A.B. in Biology, started his career as an instructor in biology. During the war he served as staff aerologist in the U.S. Navy after having taken aerological engineering at the Navy Academy Post-Graduate School. After the war, he studied at the University of California, Berkeley, and received the degree of B.L.S. (Bachelor of Library Science). He was assistant librarian at the University of California, Santa Barbara, until he became director of the ALA Library Technology Project.

Mr Poole says of Sectional Committee Z85: "The formation of this new committee is an important forward step in the development of consumer standards for equipment peculiar to libraries. Although there is evidence that librarians have been interested in standards for the products they use ever since the American Library Association was founded in 1876, there are still no nationally recognized standards for most library products. Standards developed by the new committee will guide the librarian-consumer by providing a basis upon which he can appraise and rate the many supply and equipment items in this field and thus should promote more efficient purchasing."

Three subcommittees are now at work: (1) steel bookstacks; (2) library furniture, and (3) library supplies.

"Ultimately," Mr Poole says, "it is expected that Z85 will be concerned with performance standards for the entire field of library supplies and equipment."

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A39.1-1959

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